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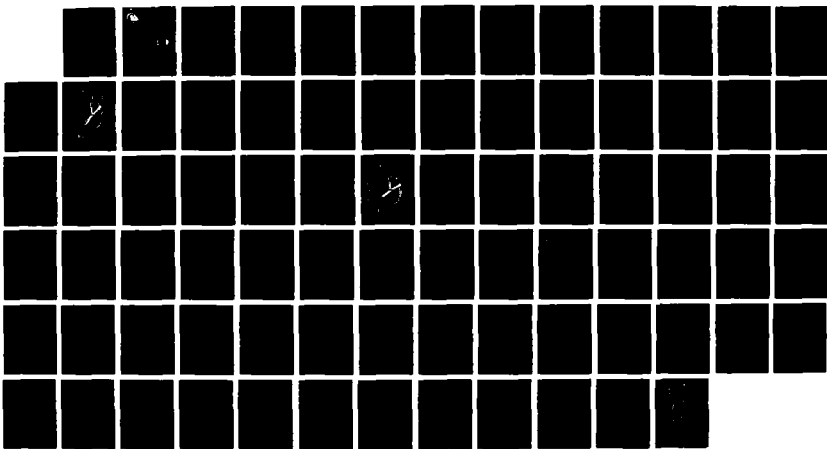
CE (CIVIL ENGINEERING) CONTROL SYSTEMS: AFSC 545X3 AND
EQUIVALENT CIVILIAN OCCUPATIONAL SERIES(U) AIR FORCE
OCCUPATIONAL MEASUREMENT CENTER RANDOLPH AFB TX JAN 88

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UNITED STATES AIR FORCE

OCCUPATIONAL SURVEY REPORT

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FEB 23 1988
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CE CONTROL SYSTEMS

AFSC 545X3 AND EQUIVALENT CIVILIAN
OCCUPATIONAL SERIES

AFPT 90-545-750

JANUARY 1988

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OCCUPATIONAL ANALYSIS PROGRAM
USAF OCCUPATIONAL MEASUREMENT CENTER
AIR TRAINING COMMAND
RANDOLPH AFB, TEXAS 78150-5000

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PREFACE

→ This report presents the results of a detailed Air Force occupational survey of the Civil Engineering Controls Systems career ladder (AFSC 545X3). The project was undertaken at the request of the Chief, Plans and Requirements Division, 3700th Technical Training Wing, Sheppard Air Force Base, Texas. Priority was established by the Occupational Analysis Program Priorities Working Group (PWG) in accordance with AFR 35-2.

The survey instrument used in this project was developed by Chief Master Sergeant Anthony J. O'Flaherty, Inventory Development Specialist. Computer support for this project was provided by Mr Wayne Fruge, while administrative support was provided by Ms Linda Sutton. Mr Hank Dubois, Occupational Analyst, analyzed the survey and wrote the final report. The report has been reviewed and approved by Lieutenant Colonel Thomas E. Ulrich, Chief, Airman Analysis Branch, Occupational Analysis Division, USAF Occupational Measurement Center.

Copies of this report are distributed to Air Staff sections, major commands, and other interested training and management personnel. Additional copies, and computer printouts from which this report was produced, may be obtained on request to the USAF Occupational Measurement Center, Attention: Chief, Occupational Analysis Division (OMY), Randolph AFB, Texas 78150-5000.

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USAF Occupational Measurement
Center

SUMMARY OF RESULTS

1. Survey Coverage: The Civil Engineering (CE) Controls Systems career ladder was surveyed to obtain current data for use in specialty training decisions. Survey results are based on the responses of 398 military personnel (74 percent of all assigned 545X3 personnel) and 291 federal civil service personnel (60 percent of those identified for survey) from several related occupational series.

2. Specialty Jobs: Three clusters of jobs (each cluster made up of jobs performing overlapping tasks) and three independent job types were identified in the analysis, and include:

HEATING, VENTILATING, AND AIR CONDITIONING (HVAC)
CONTROLS PERSONNEL
ALARM CONTROLS PERSONNEL
JOINT-SERVICES INTERIOR INTRUSION DETECTION
SYSTEM (J-SIIDS) TECHNICIANS
ENERGY MONITORING AND CONTROL SYSTEM (EMCS) PERSONNEL
CE CONTROLS SUPERVISORY PERSONNEL
CE CONTROLS INSTRUCTOR PERSONNEL

Two of the clusters--HVAC CONTROLS PERSONNEL and ALARM CONTROLS PERSONNEL--account for 71 percent of the survey respondents.

3. Career Ladder Progression: This specialty is a lateral career ladder, not having a 5-skill level. The 3- and 7-skill level jobs were found to be highly technical. While career ladder progression is somewhat visible through an increase in time spent on management and supervision by 7-skill level personnel, DAFSC 54573 job incumbents are indeed technicians first, and supervisors second.

4. AFR 39-1 Specialty Descriptions: The CE Controls Technician description accurately portrays the scope and nature of the job performed by 3- and 7-skill level personnel.

5. Training Analysis: The Specialty Training Standard (STS), which is the basic document to any Air Force career ladder training program, is generally supported by survey data--with a few paragraphs requiring review due to low percentage of members performing matched tasks. Unit 5, Block IV (Motor Control Circuits) of ATC course J3ALR54533 should be examined by training personnel to determine if retention is warranted. In addition, several survey tasks require review for possible inclusion in this course.

6. Job Satisfaction: Responses to questions related to incumbent satisfaction indicate personnel, both military and civilian, are generally satisfied with their jobs.

7. Implications: With some minor exceptions, survey data reveal that military and civilian CE Controls Systems personnel perform basically similar jobs. The career ladder STS and entry-level course require review by both training and utilization managers to ensure the most effective and efficient use of resources.

OCCUPATIONAL SURVEY REPORT
CIVIL ENGINEERING (CE) CONTROLS SYSTEMS CAREER LADDER
(AFSC 545X3)

INTRODUCTION

→ This is a report of an occupational survey of the Civil Engineering (CE) Controls Systems (AFSC 545X3) career ladder conducted by the Occupational Analysis Division, USAF Occupational Measurement Center. The occupational survey was conducted in response to a request from the 3700th Technical Training Wing, Sheppard AFB TX, to measure the impact of reducing several of the civil engineering (CE) initial skill courses in both content and length. This report highlights various task and equipment data for use in evaluating the current 545X3 training program. *Keywords: Job Analysis, Air Force, Personnel Division*

This survey includes both military and civilian members. The request to include civilian personnel in this survey came from the Air Force Engineering and Services Center (AFESC), Tyndall AFB FL. AFESC requested that the following civilian occupational job series be included in the survey:

<u>Pay Plan & Series</u>	<u>General Title</u>
GS-0802	Engineering Technician
WG-2604	Electronics Mechanic
WG-2606	Electronics Industrial Controls Mechanic
WG-2608	Electronics Digital Computer Mechanic
WG-2610	Electronics Integrated Systems Mechanic
WG-3359	Instrument Mechanic
WG-4749	Maintenance Mechanic
WG-5306	Air Conditioning Equipment Mechanic

The Air Force Civilian Personnel Management Center (AFCPMC) coordinated the survey of civilian employees with employee union officials, supplied computer listings of civilians working in the above jobs, and provided approval to survey these civilian employees. Civilian personnel completing the survey did so on a voluntary basis; therefore, civilian representation within various functional areas or respondent groupings presented in this report may not reflect the true civilian/military mix across those areas or groupings.

Background

This is the first occupational survey of the AFSC 545X3 career ladder. The April 1981 revision to AFR 39-1 established CE Controls Systems in the Airmen Classification Structure as a lateral specialty. Airmen cross-train into the specialty from one of three other mechanical/electrical career ladders--AFSC 542X0 (Electrical), AFSC 545X0 (Refrigeration and Air Conditioning), or AFSC 545X2 (Heating). Personnel in the AFSC 545X3 ladder progress from the 3-skill level (specialist) to the 7-skill level (technician) and

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share a common 9-skill level (54599, Mechanical Superintendent) and CEM Code (54500, Mechanical Manager) with the 545X0, 545X2, and Liquid Fuel Systems Maintenance (545X1) career ladders.

Personnel assigned to the CE Controls Systems specialty perform tasks associated with the installation, troubleshooting, and repair of various types of electric, electronic, and pneumatic controls and control systems for heating, ventilating, air-conditioning, fire alarm, and intrusion detection systems. In addition, personnel also have certain responsibilities for the operation and maintenance of the Energy Monitoring and Control System (EMCS).

SURVEY METHODOLOGY

Inventory Development

The data collection instrument for this occupational survey was USAF Job Inventory AFPT 90-545-750, dated September 1986. A preliminary task list was prepared after reviewing pertinent career ladder publications and directives, and tasks and data from previously surveyed civil engineering mechanical/electrical specialties. This preliminary task list was refined and validated through personal interviews with 57 training and operational subject-matter experts (military and civilian) selected to cover a wide variety of AFSC 545X2 functions. On the recommendations of major command career ladder managers, the following locations were visited:

3700 TCHTW, Sheppard AFB TX

- Location of the J3ALR54533 CE Controls Systems Specialist course

2852 CES, McClellan AFB CA

- An AFLC facility with large Controls and EMCS shops

4392 CES, Vandenberg AFB CA

- Representative of an average SAC operation

314 CES, Little Rock AFB AR

- MAC representative base with heavy base housing workload
- Significant EMCS operation

2 CES, Barksdale AFB LA

- Representative of an average size controls shop

1 CES, Langley AFB VA

- Location with base housing under civilian contract

56 CES, MacDill AFB FL

- Representative of an average size TAC unit

62 CES, McChord AFB WA

- Representative of an average size MAC unit

1606 CES, Kirtland AFB NM
- A large AFSC facility

This process resulted in a final job inventory containing a list of 799 tasks grouped within 18 duty headings and a background section which captured information such as grade, TAFMS, duty title, job interest, and equipment used or operated for each respondent.

Survey Administration

During the period November 1986 through March 1987, consolidated base personnel offices in operational units worldwide administered the inventory booklets to personnel holding CE Controls Systems DAFSCs. The personnel were selected from a computer-generated mailing list obtained from personnel data tapes maintained by the Air Force Human Resources Laboratory (AFHRL). Booklets were mailed to civilian job incumbents using mailing lists supplied by the Air Force Civilian Personnel Management Center (AFCPMC).

Each individual who responded to the inventory first completed an identification and background information section, then checked each task performed in his or her current job. After checking all tasks performed, the respondent rated each of these tasks on a 9-point scale indicating relative time spent on that task from 1 (very-small-amount time spent) through 5 (about-average time spent) to 9 (very-large-amount time spent). To determine relative time spent for each task checked by a respondent, all of the respondent's ratings were assumed to account for 100 percent of his or her time spent on the job. These ratings were summed and then divided by the number of total responses and the quotient multiplied by 100. This procedure provided a basis for comparing tasks not only in terms of percent members performing, but also in terms of average percent time spent on tasks and groups of tasks.

Survey Sample

Table 1 shows the percentage distribution, by MAJCOM, of assigned military personnel in the career ladder as of October 1986. Also listed in this table is the percentage distribution, by MAJCOM, of military respondents in the final survey sample. As the table displays, survey representation by MAJCOM was excellent. The 398 military respondents in the final survey sample represent 74 percent of the total assigned AFSC 545X3 career ladder personnel. Table 2 displays civilian survey representation by occupational series. The 60 percent return rate for civilian employees is generally higher than that of other recently surveyed civilian trades.

Task Factor Administration

In addition to completing the job inventory, selected senior AFSC 545X3 personnel (generally E-6 and E-7 technicians) were asked to complete a second booklet for collecting either training emphasis (TE) or task difficulty (TD)

TABLE 1

COMMAND DISTRIBUTION OF 545X3 MILITARY PERSONNEL
 (Assigned Manning as of October 1986)

<u>MAJCOM</u>	<u>PERCENT OF ASSIGNED</u>	<u>PERCENT OF SAMPLE</u>
SAC	38	38
TAC	13	12
MAC	13	12
ATC	9	9
PACAF	7	8
AFLC	5	5
AFSC	6	5
AAC	4	4
SP COMD	2	3
USAFE	2	2
AU	1	1
OTHER	*	1

Total 612X1 Personnel Assigned - 536

Total 612X1 Personnel Eligible for Survey** - 496

Total 612X1 Personnel in Survey Sample - 398

Percent of Assigned in Sample - 74%

Percent of Eligible in Sample - 80%

* Less than 1 percent

** Personnel projected for PCS, retirement, or discharge;
 those in hospital status; and those with less than 6
 weeks in their present job are not eligible for survey.

TABLE 2
CIVILIANS AVAILABLE/RESPONDING

<u>OCCUPATIONAL SERIES</u>	<u>NUMBER AVAILABLE FOR SURVEY</u>	<u>NUMBER RESPONDING</u>	<u>PERCENT OF AVAILABLE RESPONDING</u>
3359	222	151	68%
2604	72	45	63%
2606	69	28	41%
0802	35	22	63%
4749	32	13	41%
2608	28	15	54%
2610	11	10	91%
5306	10	5	50%
2854	3	1	33%
2601	3	1	33%

Total Civilians Available: 485
Total Civilian Surveys in Sample: 291
Percent of Eligible Civilians Responding: 60%

data. The TE and TD booklets are processed separately from the job inventory booklets. Data obtained from the TE and TD booklets is used in certain analyses discussed in detail in this report.

Training Emphasis. Technicians completing TE booklets were asked to rate tasks on a 10-point scale ranging from no training required (0) to extremely heavy training required (9). Training emphasis is a rating of which tasks require more emphasis in structured training for first-assignment personnel. Structured training is defined as training provided at resident technical schools, field training, formal on-the-job training (OJT), or any other organized training method. Training emphasis data were independently collected from 39 experienced CE Controls Systems Technicians (7-skill level personnel) stationed worldwide. If the raters were in complete agreement on what tasks were important for first-assignment training, the interrater reliability would be 1.0. The interrater reliability for the 39 TE raters was .95, which statistically indicates raters generally agreed on the tasks requiring some form of structured training to support first-assignment jobs.

Task Difficulty. Those senior technicians completing a TD booklet were asked to rate all inventory tasks on a 9-point scale (from extremely low to extremely high) as to relative difficulty. Difficulty is defined as the length of time required by an average member to learn to do the task. Task difficulty data were collected from 38 experienced AFSC 54573 personnel worldwide. As with TE ratings, if all raters were in complete accord on the relative difficulty of tasks in the inventory, the interrater reliability would be 1.0. The interrater reliability for the TD raters was .96, indicating good agreement on the relative degree of difficulty for each task in the inventory.

When used in conjunction with other information, such as percent members performing, both TE and TD ratings can provide insight into training considerations.

SPECIALTY JOBS (Career Ladder Structure)

The structure of jobs within the CE Controls Systems career ladder was examined on the basis of similarity of tasks performed and the percent of time spent ratings provided by job incumbents, independent of background or specialty factors.

For the purpose of organizing individual jobs into similar units of work, an automated job clustering program is used. Each individual's job description in the sample is compared to every other job description in terms of tasks performed and the relative amount of time spent on each task in the job inventory. The automated system is designed to locate the two job descriptions with the most similar task and percent time ratings and combine them to form a composite job description. In successive stages, new members are added to initial groups or new groups are formed based on the similarity of tasks

and percent of time ratings in each individual job description. This procedure is continued until all individuals and groups are combined to form a single composite representing the total survey sample.

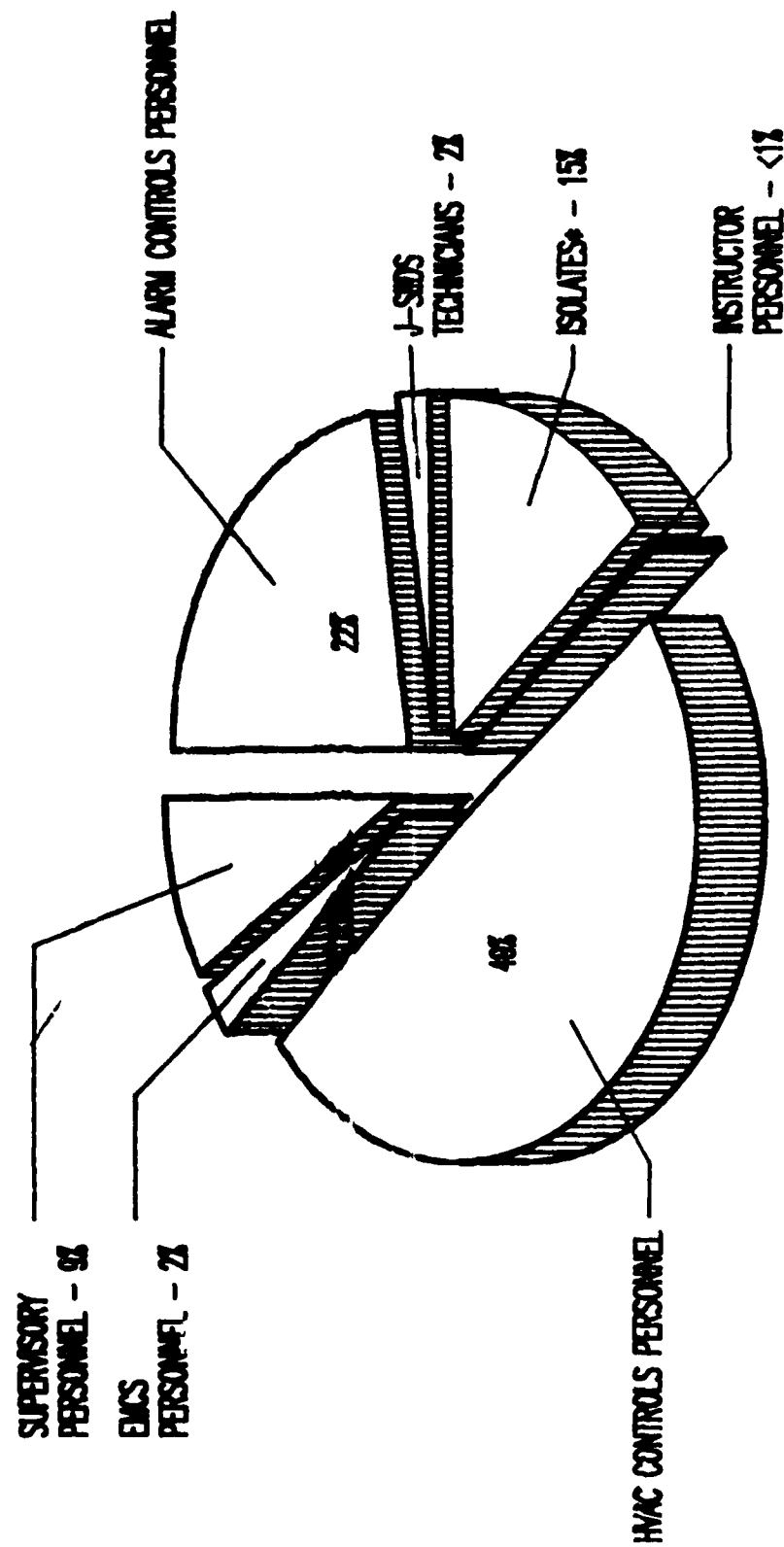
The basic identifying group used in the job structuring process is the Job Type. A job type is a group of individuals who perform many of the same tasks and spend similar amounts of time performing them. When there is a substantial degree of similarity between different job types, they are grouped together and labeled as Clusters. In many career ladders, there are specialized job types that are too dissimilar to be grouped into any cluster. These unique groups are labeled Independent Job Types.

Structure Overview

Based on the similarity of tasks performed and the amount of time spent performing each task, three clusters and three independent job types were identified in the examination of the CE Controls Systems career ladder. These major jobs, listed below, are illustrated in Figure 1 and are described on the following pages. The stage (ST) number shown beside each title is an identifier to computer-printed information and the letter N refers to the number of personnel in the group:

- I. HVAC CONTROLS PERSONNEL CLUSTER (ST0048, N=338)
 - A. Instrument Mechanics (ST0217, N=180)
 - B. Instrument and Controls Shop Foremen (ST0172, N=14)
 - C. HVAC and Alarm Controls Specialists (ST0122, N=75)
 - D. Pneumatic HVAC Controls Specialists (ST0093, N=49)
- II. ALARM CONTROLS PERSONNEL CLUSTER (ST0043, N=155)
 - A. Alarm Maintenance Shop Foremen (ST0159, N=16)
 - B. Alarm Electronics Mechanics (ST0165, N=79)
 - C. Fire Alarm Controls Specialists (ST0082, N=32)
- III. J-SIIDS TECHNICIANS INDEPENDENT JOB TYPE/IJT (ST0121, N=15)
- IV. EMCS PERSONNEL CLUSTER (ST0038, N=17)
 - A. Industrial Controls Mechanics (ST0087, N=5)
 - B. EMCS Engineering Technicians (ST0068, N=5)
- V. CE CONTROLS SUPERVISORY PERSONNEL INDEPENDENT JOB TYPE/IJT (ST0060, N=60)
- VI. CE CONTROLS INSTRUCTOR PERSONNEL INDEPENDENT JOB TYPE/IJT (ST0047, N=3)

AFSC 545X3 SPECIALTY JOBS (N=689)



* Personnel not grouped in any major job

Figure 1

The survey respondents forming these clusters and jobs account for 85 percent of the survey sample. The remaining 15 percent, referred to as isolates, were performing tasks or series of tasks that did not group them with any of the above jobs.

Two tables in this section provide various data about the clusters and independent job types identified in this analysis. Table 3 provides the relative percent time spent on each of the 18 duties by personnel in each of the major jobs. For example, the Alarm Controls Personnel (ST0043) spend 45 percent of their job time in performing tasks involving maintaining fire alarm control systems (Duty L). Table 4 provides selected background information, such as DAFSC distribution, average time in career field (TICF), and average number of tasks performed by each of the major jobs. For example, HVAC Controls Personnel (ST0048) perform an average of 292 tasks, average 55 months in the career field, and 35 percent have a DAFSC of 54533.

Also included in this report is an appendix concerning the CE Controls Systems specialty jobs. Appendix A provides various background information for all the jobs identified in the career ladder structure analysis, including the jobs within the three clusters. This appendix also lists tasks commonly performed by each of the jobs identified.

Job Descriptions

I. HEATING, VENTILATING, AND AIR CONDITIONING (HVAC) CONTROLS PERSONNEL (ST0048, N=338). Forty-nine percent of the personnel sampled perform jobs included in this cluster. As reflected in Table 3, personnel in this cluster spend 45 percent of their job time in HVAC activities: maintaining HVAC systems (Duty F--13 percent), pneumatic HVAC control systems (Duty G--20 percent), and electrical and electronic HVAC control systems (Duty H--12 percent). They spend an additional 28 percent of their job time on activities pertaining to maintenance of intrusion or fire alarm control systems. The members of this cluster of jobs perform an average of 292 tasks. Representative tasks performed by these personnel include:

- calibrate pneumatic thermostats
- remove or replace pneumatic thermostats
- read and interpret pneumatic diagrams
- adjust pneumatic dampers
- check mechanical operation of dampers
- calibrate pneumatic single input receiver controllers
- adjust damper linkages
- solder electrical connections
- adjust pneumatic damper operators
- remove or replace pneumatic actuators
- inspect pneumatic actuators for proper operation
- remove or replace pneumatic single input receiver controllers
- drain air tanks
- adjust mixed air systems
- splice copper to plastic tubing

TABLE 3

RELATIVE PERCENT TIME SPENT ON DUTIES BY MAJOR SPECIALTY JOBS

DUTIES	HVAC CONTR PERS (ST0048)	ALARM CONTR PERS (ST0043)	J-SIIDS TECHS (ST0121)	EMCS PERS (ST0038)	CE CONTR SUPV PERS (ST0060)	CE CONTR INSTR PERS (ST0047)
A ORGANIZING AND PLANNING	1	2	2	3	17	1
B DIRECTING AND IMPLEMENTING	1	2	1	4	16	3
C INSPECTING AND EVALUATING	1	2	1	2	19	1
D TRAINING	1	1	*	1	12	44
E PERFORMING ADMINISTRATIVE AND SUPPLY FUNCTIONS	2	2	3	5	14	2
F MAINTAINING HEATING, VENTILATING AND AIR CONDITIONING (HVAC) SYSTEMS	13	4	4	6	5	2
G MAINTAINING PNEUMATIC HVAC CONTROL SYSTEMS	20	4	2	2	4	15
H MAINTAINING ELECTRICAL AND ELECTRONIC HVAC CONTROL SYSTEMS	12	4	2	13	1	10
I MAINTAINING DIRECT DIGITAL CONTROL (DDC) SYSTEMS	1	*	*	9	1	3
J INSTALLING AND MAINTAINING MONITORING SYSTEMS	7	2	0	29	1	0
K MAINTAINING INTRUSION ALARM CONTROL SYSTEMS	10	23	63	6	3	3
L MAINTAINING FIRE ALARM CONTROL SYSTEMS	18	45	12	11	3	10
M MAINTAINING TRAFFIC CONTROL SYSTEMS	1	1	1	3	*	0
N MAINTAINING PHOTOVOLTAIC SYSTEMS	*	*	0	1	*	0
O MAINTAINING BASE SIREN ALERT WARNING SYSTEMS	1	1	1	1	*	*
P PERFORMING PRIME BEEF PROGRAM FUNCTIONS	3	3	7	*	3	0
Q INSPECTING MOTOR CONTROLS AND MOTORS	7	3	*	4	1	5
R PERFORMING GENERAL MAINTENANCE	1	1	*	1	*	*

* Denotes less than .5 percent

NOTE: Columns may not add to 100 percent due to rounding

TABLE 4

SELECTED BACKGROUND DATA FOR MAJOR SPECIALTY JOBS

	HVAC CONTR PERS (ST004E)	ALARM CONTR PERS (ST0043)	J-SIIDS TECHS (ST0121)	EMCS PERS (ST0038)	CE CONTR SUPV PERS (ST0060)	CE CONTR INSTR PERS (ST0047)
NUMBER IN GROUP	338	155	15	17	60	3
PERCENT OF SAMPLE	<u>49%</u>	22%	2%	2%	9%	.5%
PERCENT IN CONUS	86%	70%	7%	94%	80%	100%
MILITARY/CIVILIAN MIX (PERCENT):	54%/46%	60%/40%	100%/---	6%/94%	57%/43%	100%/---
DAFSC AND OCCUPATIONAL SERIES DISTRIBUTION (PERCENT):						
54533	<u>35%</u>	<u>36%</u>	47%	--	7%	100%
54573	19%	24%	53%	6%	<u>50%</u>	--
0802-Engineering Tech	--	--	--	<u>35%</u>	3%	--
2604-Electronics Mech	2%	<u>19%</u>	--	18%	7%	--
2606-Electronics Indust Contr Mech	4%	4%	--	18%	8%	--
2608-Electronics Digital Computer Mech	1%	4%	--	18%	2%	--
2610-Electronics Integrated Sys Mech	2%	2%	--	5%	3%	--
3359-Instrument Mechanic	<u>34%</u>	<u>10%</u>	--	--	<u>18%</u>	--
4749-Maintenance Mechanic	3%	1%	--	--	2%	--
5306-Air Conditioning Equip Mech	1%	--	--	--	--	--
AVERAGE MONTHS IN PRESENT JOB	35	31	<u>12</u>	<u>46</u>	34	17
AVERAGE T1CF (MONTHS)	<u>55</u>	51	37	<u>69</u>	67	33
PERCENT SUPERVISING AVERAGE NUMBER OF TASKS PERFORMED	24%	25%	27%	12%	<u>83%</u>	33%
	<u>292</u>	<u>159</u>	<u>76</u>	121	<u>102</u>	42

Fifty-four percent of these personnel are military members. Occupational job series 3359 (Instrument Mechanic) represents the largest concentration of civilian respondents in the cluster. Twenty-four percent of the respondents supervise at least one individual.

There were four jobs identified in this cluster. The first job, Instrument Mechanics (ST0217), is the largest job identified in the survey (N=180). Seventy percent of these job incumbents are civilians, with 51 percent from the instrument mechanic occupational job series. This group performs the core or representative job of the cluster. The second job, Instrument and Controls Shop Foremen (ST0172), spends just over 35 percent of their job time in first-line supervision. These 14 members are civilian foremen or military NCOICs, with 57 percent having a DAFSC of 54573. Another job identified is that of HVAC and Alarm Controls Specialists (ST0122). These 75 respondents spend much more time (44 percent) on maintaining fire and intrusion alarm control systems than do the other members of the cluster, while still spending over 35 percent in the maintenance of HVAC systems and HVAC associated control systems. The fourth group identified, Pneumatic HVAC Controls Specialists (ST0093), spend 37 percent of their job time solely in the maintenance of pneumatic HVAC control systems (Duty G), with 73 percent of these members being military.

II. ALARM CONTROLS PERSONNEL (ST0043, N=155). Twenty-two percent of the total personnel in the survey perform jobs included in this cluster. These personnel spend over 68 percent of their job time on tasks related to fire alarm control systems (Duty L--45 percent) and intrusion alarm control systems (Duty K--23 percent). These job incumbents perform an average of 159 tasks. Examples of these tasks include:

- perform operational tests on alarm initiating and indicating circuits and devices
- perform operational tests on control units for alarm indications
- perform PMI on control units for alarm indications
- remove or replace inoperative fuses
- perform operational tests on control panel switches
- install end of line devices
- read and interpret fire alarm schematics and drawings
- check connections for corrosion and tightness
- solder electrical connections
- isolate malfunctions in duress alarm systems
- remove or replace duress alarm systems
- remove or replace alarm control units
- bench repair intrusion alarm control systems
- remove or replace ultrasonic sensors

Sixty percent of the members of this cluster are military, with 36 percent having a DAFSC of 54533. Civilian members of the cluster come primarily from the 2604 (Electronics Mechanic--19 percent) or 3359 (Instrument Mechanic--10 percent) occupational series. Members have an average of 31 months in their present job and 51 months in the specialty.

Three jobs were identified in this cluster--one supervisory and two maintenance-oriented jobs. Alarm Maintenance Shop Foremen (ST0159) are first-line supervisors responsible for supervision of alarm controls maintenance activities. Eighty-one percent of these respondents (13 members) are military, with all members supervising an average of 6 personnel. They spend 25 percent of their job time in supervisory and administrative duties, 10 percent less than their controls shop counterparts. Alarm Electronics Mechanics (ST0165) spend 47 percent of their job on maintenance of fire alarm controls and over 26 percent on maintenance of intrusion alarm controls. Sixty-five percent of these respondents are civilians, with 34 percent of the group working in the 2604 (Electronics Mechanic) occupational series. Fire Alarm Controls Specialists (ST0082) are the most differentiated group in the cluster, spending over 60 percent of their job time maintaining fire alarm controls and less than 17 percent on intrusion controls. This group is primarily military (81 percent), with 69 percent having a DAFSC of 54533.

III. JOINT-SERVICES INTERIOR INTRUSION DETECTION SYSTEM (J-SIIDS) TECHNICIANS (ST0121, N=15). Members of this small independent job type (only 2 percent of the total sample) are responsible for the maintenance of the J-SIIDS, a system developed for use by all branches of the service to protect small arms, ammunition, and sensitive materials in storage. All but one of these military job incumbents responded from overseas locations. They spend 63 percent of their job time in the maintenance of intrusion alarm control systems while performing an average of 76 tasks, examples of which include:

- isolate malfunctions in control units
- isolate malfunctions in data transmission systems
- install duress alarm sensors
- perform PMI on duress alarm sensors
- install control units
- install ultrasonic motion sensors
- install data transmission systems
- isolate malfunctions in ultrasonic motion sensors
- perform PMI on ultrasonic motion sensors
- isolate malfunctions in passive ultrasonic sensors
- bench repair intrusion alarm control systems

Fifty-three percent of the group have a DAFSC of 54573. These incumbents average only 12 months on their present job and 37 months in the career ladder.

IV. ENERGY MONITORING AND CONTROL SYSTEM (EMCS) PERSONNEL (ST0038, N=17). This cluster of two jobs identifies personnel performing tasks associated with the Energy Monitoring and Control System (EMCS), also identified as the Energy Management Conservation System. All but one of these personnel are civilian members. Cluster personnel are differentiated from other survey respondents by the amount of time spent installing and maintaining monitoring

systems (Duty J--29 percent) and maintaining direct digital control (DDC) systems (Duty I--9 percent). These personnel perform an average of 121 tasks, including:

- perform operational tests on EMCS communications lines
- isolate malfunctions to EMCS temperature sensors
- perform operational tests on electronic interface devices
- remove or replace EMCS electronic temperature sensors
- perform operational tests on DGP components
- read and interpret wiring diagrams
- isolate malfunctions to EMCS humidity sensors
- operate DDC systems
- perform system update of software programs
- isolate malfunctions to EMCS position sensors
- calibrate sensor inputs

Cluster personnel show stability in that they average 46 months in their present job and 69 months in the career field. Civilian members are distributed across several occupational series, with 35 percent from the 0802--Engineering Technician series.

The two jobs within this cluster are differentiated by the amount of time spent on management activities and the maintenance of Direct Digital Control (DDC) systems. The Industrial Controls Mechanics (ST0087) and the EMCS Engineering Technicians (ST0068) spend similar amounts of job time relating to monitoring systems (27 and 24 percent, respectively) and electrical and electronic HVAC controls (21 and 17 percent). Members of the engineering technician group spend 26 percent of their job time performing management and administrative tasks and 14 percent maintaining DDC systems, whereas the industrial controls mechanics spend 7 percent and 5 percent of their job time on the same areas, respectively.

V. CE CONTROLS SUPERVISORY PERSONNEL (ST0060, N=60). Eighty-three percent of this group reported they were supervising other personnel, identifying themselves with titles such as instrument mechanic foreman, mechanical superintendent, control shop foreman or NCOIC, or work leader. Performing an average of 102 tasks, members of this group perform a job that is clearly supervisory in nature--spending 78 percent of their relative job time in the performance of supervisory, managerial, and administrative tasks such as:

- supervise civilians
- determine work priorities
- supervise CE Control Systems Specialists (AFSC 54533)
- coordinate material or work order status with material control
- evaluate completed or work in progress for compliance with specifications or standards

make entries on AF Forms 1879 (BCE Job Order Record)
counsel personnel on personal or military-related problems
schedule leaves or passes
assign personnel to duty positions
interpret policies, directives, or procedures for
subordinates

Fifty-seven percent of these respondents are military members and 50 percent possess a DAFSC of 54573. The occupational job series most represented among the civilian members of this group is 3359--Instrument Mechanic. The predominant grades for members of the group are E-6 and E-7 for military members and WS-10 and WS-11 for their civilian counterparts. These job incumbents have an average of 34 months in their present job and 67 months in the specialty.

VI. CE CONTROLS INSTRUCTOR PERSONNEL (ST0047, N=3). These are DAFSC T54533 personnel assigned to the technical training center. With an average of 33 months in the AFSC 545X3 career ladder, group members responded to a series of technically oriented tasks performed when demonstrating appropriate techniques or procedures, as well as those normally performed in an academic classroom or laboratory environment. Examples of tasks which define the group include:

conduct resident course classroom training
evaluate progress of resident course students
develop resident course or career development course
(CDC) curriculum materials
administer tests
score tests
determine resident course training requirements
evaluate training methods or techniques
write test questions
read and interpret pneumatic diagrams
read and interpret wiring diagrams
develop supplemental courses (advanced courses)

Comparison of Military and Civilian Specialty Job Incumbents

One of the purposes for including civilian personnel in this survey was to determine whether civilian personnel were performing jobs not being performed by their military counterparts. Data in Table 4 reflect that the only major job identified without significant military representation is that of EMCS PERSONNEL. This situation is somewhat expected in that the Energy Monitoring and Control System is presently identified as only a subject knowledge item on the career ladder Specialty Training Standard (STS). The above discussion did reveal that two specialty jobs, Instrument Mechanics and Alarm Electronics Mechanics, had a somewhat greater civilian membership--70 and 65

percent, respectively. Even here, as these were the two largest jobs identified, large numbers of military members were performing the full range of tasks performed by civilians within their respective jobs. Overall, military members are performing jobs and gaining experience across the entire CE controls job spectrum--excepting EMCS.

Summary

Three clusters (including nine jobs) and three independent job types were identified in the career ladder structure analysis. The three clusters and one independent job were directly involved in the maintenance duties and tasks of the career ladder. The remaining independent job types were involved in managerial, supervisory, and training activities. Two job clusters, HVAC CONTROLS PERSONNEL and ALARM CONTROLS PERSONNEL, accounted for 71 percent of the total sample. Incumbents of jobs within the HVAC cluster, although varying to some degree in terms of the amount of time spent in a particular HVAC controls area (Duty F, G, or H), were generally performing a similar range of tasks across those duties. In addition, the HVAC personnel were spending 28 percent of their job time on alarm control systems. Incumbents of jobs within the ALARM CONTROLS cluster spend 68 percent of their job time on either intrusion or fire alarm control systems, with very little crossover to HVAC controls. Two very small specialized jobs were identified: J-SIIDS TECHNICIANS, responding from overseas to tasks associated with a unique intrusion detection system; and EMCS PERSONNEL, a predominantly civilian job cluster responsible for operating and maintaining the Energy Monitoring and Control System.

ANALYSIS OF DAFSC GROUPS

An analysis of DAFSC groups, in conjunction with the analysis of the career ladder structure, is an important part of each occupational survey report. The DAFSC analysis identifies similarities and differences in task and duty performance at the various skill levels. This information may then be used to evaluate how well career ladder documents, such as AFR 39-1 Specialty Descriptions and the Specialty Training Standard (STS), reflect what career ladder personnel are actually doing in the field.

The distribution of skill level groups across the major specialty jobs is displayed in Table 5, while Table 6 displays the relative time spent on each duty by the two skill level groups being discussed. A generally typical pattern of progression is present, with personnel spending more of their relative time on duties involving supervision, management, inspection, training, and administration (Duties A through E) upon advancement from the 3-skill level to DAFSC 54573. Nevertheless, 7-skill level personnel are indeed technician/supervisors--spending 74 percent of their job time on technical task performance.

TABLE 5
DISTRIBUTION OF 545X3 DAFSC GROUP MEMBERS
ACROSS MAJOR SPECIALTY JOBS
(PERCENT RESPONDING)

<u>MAJOR SPECIALTY JOBS</u>	<u>DAFSC 54533 (N=229)</u>	<u>DAFSC 54573 (N=169)</u>
I. HVAC CONTROLS PERSONNEL (N=338)	52%	37%
II. ALARM CONTROLS PERSONNEL (N=155)	24%	22%
III. J-SIIDS TECHNICIANS (N=15)	3%	5%
IV. EMCS PERSONNEL (N=17)	0%	*
V. CE CONTROLS SUPERVISORY PERSONNEL (N=60)	2%	18%
VI. CE CONTROLS INSTRUCTOR PERSONNEL (N=3)	1%	0%
MEMBERS NOT GROUPED (N=101)	<u>18%</u>	<u>18%</u>
Totals	100%	100%

* Denotes less than 1 percent

TABLE 6
RELATIVE PERCENT TIME SPENT ON DUTIES BY 545X3 DAFSC GROUPS

<u>DUTIES</u>	<u>DAFSC 54533</u>	<u>DAFSC 54573</u>
A ORGANIZING AND PLANNING	2	6
B DIRECTING AND IMPLEMENTING	1	5
C INSPECTING AND EVALUATING	2	5
D TRAINING	2	4
E PERFORMING ADMINISTRATIVE AND SUPPLY FUNCTIONS	3	6
F MAINTAINING HEATING, VENTILATING AND AIR CONDITIONING (HVAC) SYSTEMS	10	8
G MAINTAINING PNEUMATIC HVAC CONTROL SYSTEMS	16	11
H MAINTAINING ELECTRICAL AND ELECTRONIC HVAC CONTROL SYSTEMS	7	6
I MAINTAINING DIRECT DIGITAL CONTROL (DDC) SYSTEMS	*	1
J INSTALLING AND MAINTAINING MONITORING SYSTEMS	3	4
K MAINTAINING INTRUSION ALARM CONTROL SYSTEMS	16	16
L MAINTAINING FIRE ALARM CONTROL SYSTEMS	25	18
M MAINTAINING TRAFFIC CONTROL SYSTEMS	1	1
N MAINTAINING PHOTOVOLTAIC SYSTEMS	*	*
O MAINTAINING BASE SIREN ALERT WARNING SYSTEMS	1	1
P PERFORMING PRIME BEEF PROGRAM FUNCTIONS	6	6
Q INSPECTING MOTOR CONTROLS AND MOTORS	4	4
R PERFORMING GENERAL MAINTENANCE	*	*

* Denotes less than .5 percent

NOTE: Columns may not add to 100 percent due to rounding

Skill Level Descriptions

DAFSC 54533: These 229 airmen in the 3-skill level group represent 58 percent of the military survey sample and 33 percent of the total sample. This group performs an average of 180 tasks, with 134 of the 799 total survey tasks accounting for 50 percent of their job time. The majority of these incumbents (52 percent) are distributed within the HVAC CONTROLS specialty job, with another 24 percent aligned with ALARM CONTROLS job activities (see Table 5). Sixty-seven percent of their job time is spent performing tasks associated with alarm control systems (41 percent), pneumatic HVAC control systems (16 percent), and HVAC systems (10 percent). Maintaining electrical and electronic HVAC control systems accounts for only 7 percent of their relative job time. Supervisory, managerial, and administrative duties account for only 10 percent of this group's relative job time. Table 7 presents examples of tasks representative of this group's work, as well as an indication of differences between the it and the 7-skill level group.

DAFSC 54573: Seven-skill level personnel (42 percent of the military survey sample and 25 percent of the total sample), as mentioned earlier, are technician/supervisors, spending only 26 percent of their job time performing duties and tasks associated with management, supervision, and administration--while performing an average of 182 tasks. Fifty-seven percent of this group indicated they supervised an average of three personnel. Fifty-nine percent of these incumbents are performing tasks that align them with the work-oriented HVAC CONTROLS and ALARM CONTROLS clusters, with only 16 of the clusters' 7-skill level members identified as shop foremen. Only 18 percent of the 7-skill level respondents are identified as supervisors-managers in the CE CONTROLS SUPERVISORY cluster (see Table 5). Table 6 reflects that alarm controls maintenance accounts for the largest concentration of job time (34 percent), with duties involving HVAC systems and various HVAC controls--Duties F, G, and H--accounting for 25 percent of their relative job time.

Summary

Career ladder progression is somewhat reflected by an increase in the amount of job time spent in the performance supervisory and management tasks. The size of that increase, when considered along with the percent members performing representative tasks (see Table 7), indicates the CE Controls Systems career ladder has a very high degree of technical commrality across skill levels.

ANALYSIS OF AFR 39-1 SPECIALTY DESCRIPTIONS

After analyzing specialty job and skill level survey data, it is possible to use this information to analyze AFR 39-1 Specialty Descriptions for career ladder members at various skill levels. Survey data were compared to the description for Civil Engineering Controls Systems Technician, dated 15 March 1985--as a single description is used for this lateral career ladder.

TABLE 7
 DISPLAY OF REPRESENTATIVE TASKS
 FOR DAFSC GROUPS AND DIFFERENCES BETWEEN THE GROUPS
 (Percent Members Performing)

TASKS	DAFSC 54533 (N=229)	DAFSC 54573 (N=169)	DIFFERENCE
G233 REMOVE OR REPLACE PNEUMATIC SINGLE INPUT RECEIVER CONTROLLERS	57	39	+18
G212 INSPECT PNEUMATIC ACTUATORS FOR PROPER OPERATION	67	50	+17
G203 DRAIN AIR TANKS	59	41	+18
G235 REMOVE OR REPLACE PNEUMATIC THERMOSTATS	70	53	+17
G195 CALIBRATE PNEUMATIC THERMOSTATS	68	51	+17
F117 ADJUST HOT WATER VALVES	50	34	+16
F119 ADJUST MIXED AIR SYSTEMS	62	46	+16
G222 INSTALL PNEUMATIC THERMOSTATS	63	47	+16
L507 PERFORM PMI ON CONTROL PANEL SWITCHES	55	40	+15
G188 ADJUST PNEUMATIC DAMPER OPERATORS	66	50	+16
L458 CHECK CONNECTIONS FOR CORROSION AND TIGHTNESS	66	50	+16
L483 PERFORM OPERATIONAL TESTS ON ALARM INITIATING AND INDICATING CIRCUITS AND DEVICES	69	54	+15
L539 REMOVE OR REPLACE INOPERATIVE FUSES	69	54	+15
L505 PERFORM PMI ON CODING MECHANISMS	44	30	+14
G237 SPLICE COPPER TO PLASTIC TUBING	54	40	+14
L467 CLEAN CONTROL PANELS, INITIATING, AND SIGNALING DEVICES	58	46	+12
G229 REMOVE OR REPLACE PNEUMATIC ACTUATORS	59	46	+13
L475 INSTALL END OF LINE DEVICES	69	57	+12
L525 READ AND INTERPRET FIRE ALARM SCHEMATICS AND DRAWINGS	64	53	+11

K440 REMOVE OR REPLACE ELECTRONIC CYPHER LOCK SYSTEMS	31	41	-10
E100 MAKE ENTRIES ON AF FORMS 1734 (BCE DAILY WORK SCHEDULE)	18	30	-12
A12 ESTABLISH PERFORMANCE STANDARDS FOR SUBORDINATES	13	37	-24
A18 PLAN WORK ASSIGNMENTS	20	45	-25
B32 INTERPRET POLICIES, DIRECTIVES, OR PROCEDURES FOR SUBORDINATES	16	43	-27
D73 DETERMINE OJT REQUIREMENTS	11	40	-29
C59 INSPECT SHOP FACILITIES	19	49	-30
B23 COUNSEL PERSONNEL ON PERSONAL OR MILITARY- RELATED PROBLEMS	19	53	-34
C61 PREPARE APR	24	58	-34

Although broadly written, this technician description accurately portrays the scope and nature of the job performed by 3- and 7-skill level personnel. The only exception noted concerned references to traffic control systems and utility meters which were not supported by survey data. These areas should be considered for possible deletion in future revisions to AFR 39-1.

OVERVIEW OF CIVILIAN OCCUPATIONAL JOB SERIES GROUPS

An examination of various data relative to occupational job series groups is important to this report, as civilians account for over 42 percent (N=291) of the total sample. This discussion, similar to the DAFSC analysis, includes relative time spent across duties and distribution across major specialty jobs.

As tables in this section reflect job series numbers for column headings, the following list of job series and general titles is provided for reference:

<u>Pay Plan & Series</u>	<u>General Title</u>
GS-0802	Engineering Technician
WG-2604	Electronics Mechanic
WG-2606	Electronics Industrial Controls Mechanic
WG-2608	Electronics Digital Computer Mechanic
WG-2610	Electronics Integrated Systems Mechanic
WG-3359	Instrument Mechanic
WG-4749	Maintenance Mechanic
WG-5306	Air Conditioning Equipment Mechanic

Table 8 displays the distribution of the above civilian occupational series groups across the major specialty jobs. The HVAC CONTROLS PERSONNEL cluster accounts for more than 50 percent of four of the surveyed job series. For example, 76 percent of the surveyed instrument mechanics (3359), the largest job series, are performing duties and tasks that grouped them in that cluster. Sixty-seven percent of the second largest job series surveyed, electronics mechanics (2604), are aligned with the ALARM CONTROLS PERSONNEL cluster. Maintenance mechanics (5306) are the only job series group not represented in the CE CONTROLS SUPERVISORY PERSONNEL cluster, while no civilian members are represented in either the instructor or J-SIIDS jobs.

There are many similarities between occupational series with regards to relative time spent across duties (see Table 9). A majority of occupational groups are performing comparable amounts of time on monitoring systems and alarm systems. The electronics mechanics (2604) spend 62 percent of their job time on tasks involving maintenance of both intrusion and fire alarms. Three job series groups--2606, 3359 and 4749--spend from 37 to 40 percent of their worktime maintaining HVAC systems or various HVAC controls. The engineering

TABLE 8

DISTRIBUTION OF CE CONTROLS CIVILIAN OCCUPATIONAL
JOB SERIES GROUPS ACROSS MAJOR SPECIALTY JOBS
(PERCENT RESPONDING)

MAJOR SPECIALTY JOBS	0802 (N=22)	2604 (N=45)	2606 (N=28)	2608 (N=15)	2610 (N=10)	3359 (N=151)	4749 (N=13)	5306 (N=5)
I. HVAC CONTROLS PERSONNEL (N=338)	0%	16%	46%	20%	(60%)	(76%)	(77%)	(60%)
II. ALARM CONTROLS PERSONNEL (N=155)	0%	(67%)	21%	40%	10%	11%	15%	0%
III. J-SIIDS TECHNICIANS (N=15)	0%	0%	0%	0%	0%	0%	0%	0%
IV. EMCS PERSONNEL (N=17)	27%	6%	11%	20%	10%	0%	0%	0%
V. CE CONTROLS SUPERVISORY PERSONNEL (N=60)	(10%)	(9%)	(18%)	(7%)	(20%)	(7%)	(8%)	0%
VI. CE CONTROLS INSTRUCTOR PERSONNEL (N=3)	0%	0%	0%	0%	0%	0%	0%	0%
MEMBERS NOT GROUPED (N=101)	(63%)	(2%)	(4%)	(13%)	(0%)	(6%)	(0%)	(40%)
Totals	100%	100%	100%	100%	100%	100%	100%	100%

TABLE 9

RELATIVE PERCENT TIME SPENT ON DUTIES BY CIVILIAN
OCCUPATIONAL JOB SERIES GROUPS

DUTIES	0802 (N=22)	2604 (N=45)	2606 (N=28)	2608 (N=15)	2610 (N=10)	3359 (N=151)	4749 (N=13)	5306 (N=5)
A ORGANIZING AND PLANNING	11	4	3	3	5	3	4	1
B DIRECTING AND IMPLEMENTING	7	2	3	3	4	2	2	2
C INSPECTING AND EVALUATING	7	3	5	3	6	3	4	2
D TRAINING	2	2	2	2	2	2	2	2
E PERFORMING ADMINISTRATIVE AND SUPPLY FUNCTIONS	17	3	7	2	6	2	3	5
F MAINTAINING HEATING, VENTILATING AND AIR CONDITIONING (HVAC) SYSTEMS	14	2	13	8	6	12	13	17
G MAINTAINING PNEUMATIC HVAC CONTROL SYSTEMS	2	3	11	7	7	15	14	19
H MAINTAINING ELECTRICAL AND ELECTRONIC HVAC CONTROL SYSTEMS	8	6	13	10	9	13	12	4
I MAINTAINING DIRECT DIGITAL CONTROL (DDC) SYSTEMS	17	2	*	4	1	1	1	*
J INSTALLING AND MAINTAINING MONITORING SYSTEMS	6	3	8	14	11	8	8	8
K MAINTAINING INTRUSION ALARM CONTROL SYSTEMS	2	22 40	8 17	14 24	13 24	9 18	10 17	13 10
L MAINTAINING FIRE ALARM CONTROL SYSTEMS	2	1	1	3	*	2	2	*
M MAINTAINING TRAFFIC CONTROL SYSTEMS	2	1	*	*	0	*	*	*
N MAINTAINING PHOTOVOLTAIC SYSTEMS	*	1	*	*	*	*	*	*
O MAINTAINING BASE SIREN ALERT WARNING SYSTEMS	*	2	1	1	*	1	2	1
P PERFORMING PRIME BEEP PROGRAM FUNCTIONS	1	*	*	*	*	*	*	1
Q INSPECTING MOTOR CONTROLS AND MOTORS	2	3	7	1	5	7	7	15
R PERFORMING GENERAL MAINTENANCE	*	1	1	2	1	1	*	0

* Denotes less than .5 percent

NOTE: Columns may not add to 100 percent due to rounding

technicians (0802) spend over 40 percent of their time performing tasks associated with management and administration--which is expected as this is the only general schedule (GS) series included in the survey.

Data presented in Tables 8 and 9 generally reflect that civilian members surveyed are represented in all major maintenance specialty jobs, and have both similar and peculiar characteristics with regard to relative time spent across duties. Specific task performance data can be found on each occupational job series group in Appendix B.

TRAINING ANALYSIS

Occupational survey data are one of the many sources of information which can be used to assist in the development of a training program relevant to the needs of personnel working in their first assignment. Training and functional managers should give special attention to the discussion and presentation of data in this section of the report, as the primary reason for this survey was the collection of data to aid in determining the relevancy of current training programs.

Information which may be used in analyzing existing training or the need for additional training include the overall description of the job being performed by first-assignment (1-48 months TICF) personnel and their overall distribution across career ladder jobs; percentages of first-job (1-24 months TICF) or first-assignment members performing specific tasks or using certain equipment; as well as training emphasis and task difficulty ratings (previously explained in the SURVEY METHODOLOGY section).

To assist specifically in the review of the CE Controls Systems Specialty Training Standard (STS) and the Plan of Instruction (POI), technical school training development personnel and 545X3 course instructor personnel from Sheppard Technical Training Center, Sheppard Air Force Base, Texas, matched job inventory tasks to appropriate sections and subsections of the STS and the POI for course J3ALR54533. It was this task matching upon which comparison of survey data to those documents was based. A complete computer listing displaying the percent members performing tasks, training emphasis ratings for each task, task difficulty ratings for each task, along with STS and POI matchings has been forwarded to the technical training center for their use in further detailed reviews of career ladder training programs. Summaries of the above-mentioned information are given below.

First-Assignment Personnel

The 325 first-assignment military personnel (1-48 months TICF) represent over 80 percent of the military survey sample. Task performance across duties is reflected in the relative time spent in those duties (see Table 10). Fourteen percent of their job time is spent on pneumatic HVAC controls, with only 7 percent spent on electrical and electronic controls. The greatest amount of

TABLE 10
RELATIVE PERCENT TIME SPENT ON DUTIES
BY FIRST-ASSIGNMENT PERSONNEL
(1-48 Months TICF)

<u>DUTIES</u>	<u>PERCENT TIME SPENT</u>
A ORGANIZING AND PLANNING	3
B DIRECTING AND IMPLEMENTING	2
C INSPECTING AND EVALUATING	3
D TRAINING	2
E PERFORMING ADMINISTRATIVE AND SUPPLY FUNCTIONS	4
F MAINTAINING HEATING, VENTILATING AND AIR CONDITIONING (HVAC) SYSTEMS	10
G MAINTAINING PNEUMATIC HVAC CONTROL SYSTEMS	14
H MAINTAINING ELECTRICAL AND ELECTRONIC HVAC CONTROL SYSTEMS	7
I MAINTAINING DIRECT DIGITAL CONTROL (DDC) SYSTEMS	1
J INSTALLING AND MAINTAINING MONITORING SYSTEMS	3
K MAINTAINING INTRUSION ALARM CONTROL SYSTEMS	15
L MAINTAINING FIRE ALARM CONTROL SYSTEMS	23
M MAINTAINING TRAFFIC CONTROL SYSTEMS	1
N MAINTAINING PHOTOVOLTAIC SYSTEMS	*
O MAINTAINING BASE SIREN ALERT WARNING SYSTEMS	1
P PERFORMING PRIME BEEF PROGRAM FUNCTIONS	6
Q INSPECTING MOTOR CONTROLS AND MOTORS	4
R PERFORMING GENERAL MAINTENANCE	*

* Denotes less than .5 percent

NOTE: Column may not add to 100 percent due to rounding

their job time is spent in the maintenance of fire alarm controls (23 percent), followed by intrusion alarm controls (15 percent). They are spending only 14 percent of their time across the five duties involving management, supervision, and administration. Distribution of first-assignment AFSC 545X3 personnel is displayed in Figure 2, reflecting the greatest percentage of first-assignment personnel (47 percent) are involved in the maintenance of HVAC systems and various HVAC controls. The distribution depicted in Figure 2 parallels the distribution of the total survey sample (military and civilian) displayed earlier in the SPECIALTY JOBS section.

Table 11 displays just some of the average 176 tasks performed by first-assignment personnel. Tools or equipment used or operated by more than 30 percent of this group are listed in Table 12. HVAC controls systems and fire and security alarm systems operated or worked on by 30 percent or more of the first-assignment respondents are displayed in Table 13. This type of information may be helpful to technical school and MAJCOM training personnel in streamlining training programs.

Training Emphasis and Task Difficulty Data

Training emphasis (TE) and task difficulty (TD) data are secondary factors that can assist technical school personnel in deciding what tasks should be emphasized in entry-level training. These ratings, based on the judgments of senior career ladder NCOs working at operational units in the field, are collected to provide training personnel with a rank-ordering of those tasks considered important for first-assignment airman training (TE), along with a measure of the difficulty of those tasks (TD). When combined with data on the percentages of first-assignment personnel performing tasks, comparisons can then be made to determine if training adjustments are necessary. For example, tasks receiving high ratings on both task factors, accompanied by moderate to high percentages performing, may warrant resident training. Those tasks receiving high task factor ratings, but low percentages performing, may be more appropriately planned for OJT programs within the career ladder. Low task factor ratings may highlight tasks best omitted from training for first-assignment personnel, but this decision must be weighed against percentages of personnel performing the tasks, command concerns, and criticality of the tasks. Various lists of tasks, accompanied by TE and TD ratings, are contained in the TRAINING EXTRACT package and should be reviewed in detail by technical school personnel. (For a more detailed explanation of TE and TD ratings, see Task Factor Administration in the SURVEY METHODOLOGY section of this report).

Specialty Training Standard (STS)

A comprehensive review of STS 545X3, dated November 1983, compared STS items with survey data. STS paragraphs containing general knowledge or subject matter knowledge requirements were not reviewed. Because STS formats have been changed since the publishing of this STS, training personnel will be expected to revise the STS to comply with the current AFR 8-13, as supplemented, the next rewrite.

DISTRIBUTION OF DAFSC 545X3 1-48 MONTHS TICF
PERSONNEL ACROSS MAJOR SPECIALTY JOBS
(N=325)

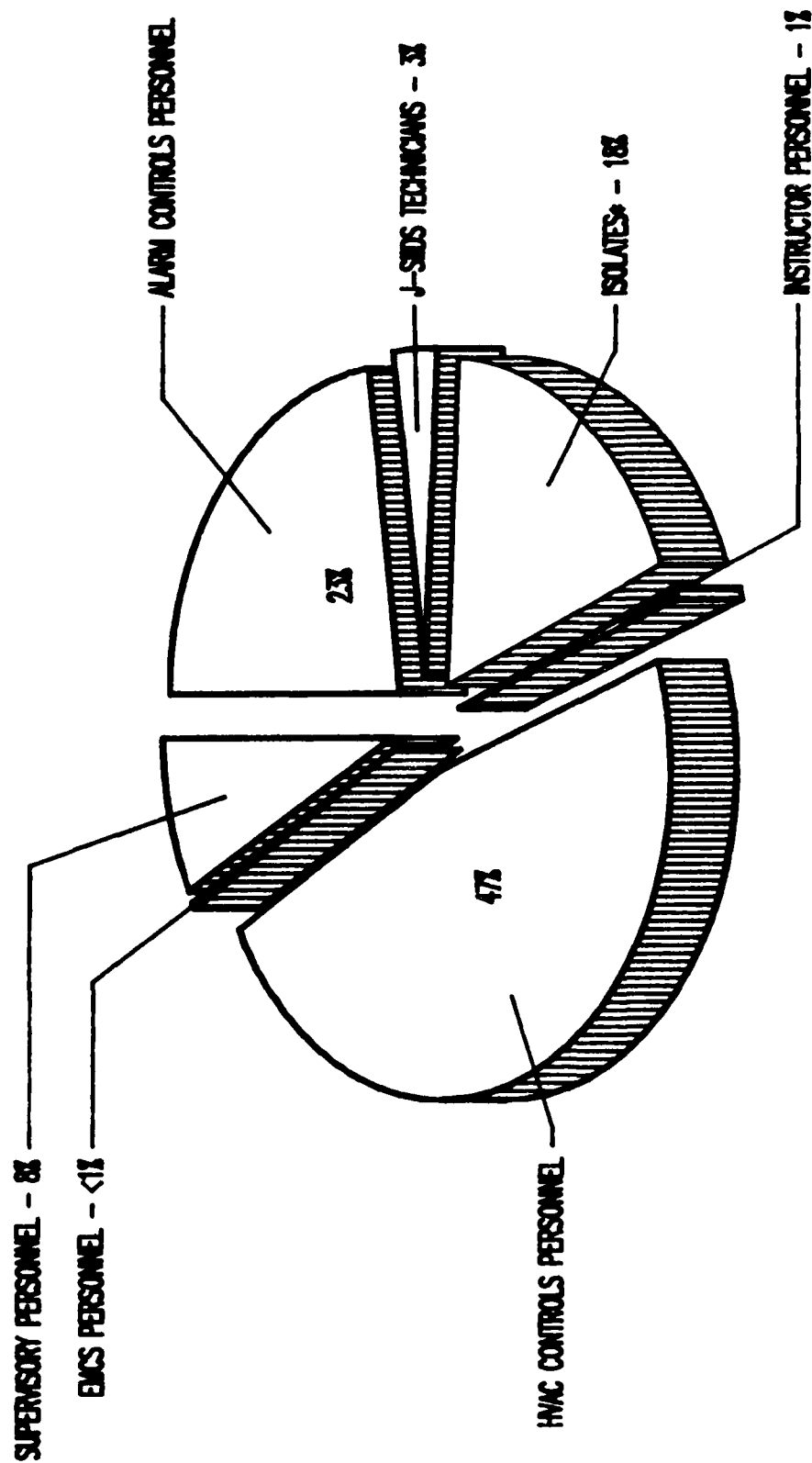


Figure 2

TABLE 11
 REPRESENTATIVE TASKS PERFORMED
 BY AFSC 545X3 FIRST-ASSIGNMENT PERSONNEL
 (1-46 Months TICF)

TASKS	PERCENT MEMBERS PERFORMING (N=325)
P636 FIRE M-16 RIFLES	77
G236 SOLDER ELECTRICAL CONNECTIONS	72
P632 DON CHEMICAL WARFARE PERSONAL PROTECTIVE CLOTHING	69
F113 ADJUST DAMPER LINKAGES	69
F170 READ AND INTERPRET WIRING DIAGRAMS	67
L488 PERFORM OPERATIONAL TESTS ON CONTROL UNITS FOR ALARM INDICATIONS	66
F114 ADJUST DAMPERS	65
P634 ERECT TENTS	65
G235 REMOVE OR REPLACE PNEUMATIC THERMOSTATS	65
F133 CHECK MECHANICAL OPERATION OF DAMPERS	65
L483 PERFORM OPERATIONAL TESTS ON ALARM INITIATING AND INDICATING CIRCUITS AND DEVICES	64
L489 PERFORM OPERATIONAL TESTS ON CONTROL UNITS FOR TROUBLE INDICATIONS	64
L539 REMOVE OR REPLACE INOPERATIVE FUSES	63
L475 INSTALL END OF LINE DEVICES	63
L469 DISCONNECT SUPERVISORY CIRCUITS TO TEST FOR OPENS, GROUNDS, OR SHORTS	62
L473 INSPECT FIRE ALARM CONTROL SYSTEMS FOR CORROSION OR FOREIGN OBJECTS	62
G195 CALIBRATE PNEUMATIC THERMOSTATS	62
G228 READ AND INTERPRET PNEUMATIC DIAGRAMS	62
L459 CHECK CONTROL PANELS FOR INOPERATIVE FUSES	62
G212 INSPECT PNEUMATIC ACTUATORS FOR PROPER OPERATION	62
L484 PERFORM OPERATIONAL TESTS ON BATTERY CHARGERS	61
G188 ADJUST PNEUMATIC DAMPER OPERATORS	61
L525 READ AND INTERPRET FIRE ALARM SCHEMATICS AND DRAWINGS	61
L509 PERFORM PMI ON CONTROL UNITS FOR TROUBLE INDICATIONS	61
L458 CHECK CONNECTIONS FOR CORROSION AND TIGHTNESS	61
P630 ASSEMBLE AND TOW AM-2 MATTING FOR RAPID RUNWAY REPAIR	60
K377 INSTALL DURESS ALARM SENSORS	59
G222 INSTALL PNEUMATIC THERMOSTATS	58
K393 ISOLATE MALFUNCTIONS IN CONTROL UNITS	58
K396 ISOLATE MALFUNCTIONS IN DURESS ALARM SENSORS	57
K439 REMOVE OR REPLACE DURESS ALARM SYSTEMS	57
F119 ADJUST MIXED AIR SYSTEMS	57

TABLE 12

TOOLS OR EQUIPMENT USED OR OPERATED BY
30 PERCENT OR MORE OF FIRST-ASSIGNMENT PERSONNEL
(1-48 Months T1CF)

<u>VEHICLES OR EQUIPMENT USED</u>	<u>PERCENT MEMBERS RESPONDING (N=325)</u>
DIGITAL MULTIMETERS	93
CRIMPING TOOLS	86
OHMMETERS	86
PORTABLE POWER DRILLS	86
SOLDERING GUNS	83
SOLDERING IRONS	82
DIGITAL THERMOMETERS	71
MANUAL KNOCKOUTS	71
ANALOG MULTIMETERS	67
CLAMP-ON AMMETERS	66
CALCULATORS	59
PNEUMATIC CALIBRATORS	59
FLOWHOODS	56
MERCURY THERMOMETERS	53
HUMIDITY RECORDERS	49
DRILL PRESSES	48
TEMPERATURE RECORDERS	47
PSYCHROMETRIC CHARTS	46
PSYCHROMETERS	45
PORTABLE AMMETERS	43
PHONE METERS/HANDSETS	40
PROPANE TORCHES	40
DECADE RESISTOR BOXES	39
VELOMETERS	34
WIRE GAUGES	34
CAPACITANCE DECADE BOXES	32
INSTALLED AMMETERS	32
HYDRAULIC KNOCKOUTS	30

TABLE 13

HVAC CONTROLS AND ALARM SYSTEMS OPERATED OR WORKED
ON BY 30 PERCENT OR MORE OF FIRST-ASSIGNMENT PERSONNEL
(1-48 Months TICF)

<u>TYPE CONTROLS SYSTEM</u>	<u>PERCENT MEMBERS RESPONDING (N=325)</u>
<u>HVAC Controls</u>	
Honeywell	86
Johnson	81
Barber-Coleman	72
<u>Fire Alarm Systems</u>	
Simplex	70
Monaco	67
Edwards	66
Pyrotechnics	63
Notifier	53
Honeywell	52
Firelite	51
Kidde	43
ADT	40
Potter	36
Gamewell	32
<u>Security Alarm Systems</u>	
J-SIIDS	63
ADT	39
Ademco	36

The normal criteria for STS evaluation, as set forth in AFR 8-13, is that tasks matched to the STS be performed by 20 percent of the incumbents of the first-assignment, 3-skill level, or 7-skill level DAFSC groups. Using this criteria, the majority of STS elements are supported by the percent of personnel performing matched tasks; however, there are elements not supported by survey data. Areas requiring evaluation are Motor Controls and Motors (para 16), Monitoring Systems (para 17), and Traffic Controls (para 19). Tasks that were matched to these areas generally show less than 20 percent of the criterion groups responding to the tasks. Table 14 presents examples of STS items where the percent members performing tasks is less than 20 percent.

Tasks not matched to any element of the STS are listed at the end of the STS computer listing. These were reviewed to determine if there were any tasks concentrated around any particular functions or jobs. No particular trends were noted. Examples of technical tasks performed by 20 percent or more respondents of the STS target groups, but which are not referenced to any STS element, are displayed in Table 15. Training personnel and subject-matter experts should review these and other eligible unreferenced tasks to determine if inclusion in the STS is justified.

Plan of Instruction (POI)

J3ALR54533, CE Controls Systems

Based on the previously mentioned assistance from the technical school subject-matter experts in matching inventory tasks to the J3ALR54533 POI, dated 26 March 1985, a computer product was generated displaying the results of the matching process. Information furnished for consideration includes percent members performing data for first-job job (1-24 months TICF) and first-assignment (1-48 months TICF) personnel, as well as training emphasis (TE) and task difficulty (TD) ratings for individual tasks.

Review of tasks matched to the POI reveals that most performance objectives are well supported by survey data based on percentages of first-assignment personnel performing tasks or high TE or TD ratings for pertinent tasks. The notable exception is Block IV, Unit 5 (Motor Control Circuits). Only one of the 15 tasks matched to this unit's objectives was performed by more than 30 percent of the first-assignment personnel.

Additionally, some apparently significant tasks with high TE ratings, sufficiently high TD ratings, and 30 percent or more first-job or first-assignment personnel performing were not matched to any POI blocks of instruction. This combination of factors indicates formal training may be required for certain of those tasks. Table 16 lists a sampling of such tasks. Subject-matter experts and training specialists should perform an in-depth review of these and other qualifying tasks contained in the "Tasks Not Referenced" section of the previously mentioned computer printout to determine the necessity for training and the most effective method to accomplish it.

TABLE 14

EXAMPLES OF STS PERFORMANCE ELEMENTS REFLECTING
LOW PERCENT MEMBERS PERFORMING TASKS
(Less than 20 percent members performing)

STS ELEMENTS	TASKS	PERCENT MEMBERS PERFORMING					TASK DIFF**
		FIRST JOB (N=173)	FIRST ASGMT (N=325)	DAFSC 54533 (N=229)	DAFSC 54573 (N=169)	TNG EMPH*	
17.	MONITORING SENSORS						
17b(2)	Install - Flow Sensors J336 Install EMCS flow sensors	18	18	19	17	4.31	4.84
17b(5)	Install - Electrical Measuring Sensors J335 Install EMCS electric measuring sensors	14	13	14	14	4.18	5.09
17c(6)	Troubleshoot - Humidity Sensors J350 Isolate malfunctions to EMCS humidity sensors	14	16	17	17	5.10	6.21
17d(4)	Calibrate - Position Sensors J324 Calibrate EMCS position sensors	12	11	11	13	4.69	5.93

* Training Emphasis has an average of 3.24 and a standard deviation of 1.51

** Task Difficulty has an average of 5.00 and a standard deviation of 1.00

TABLE 15

EXAMPLES OF TASKS NOT REFERENCED TO 545X3 STS
WITH 20 PERCENT OR MORE MEMBERS PERFORMING
(Experience and DAFSC Groups)

TASKS	PERCENT MEMBERS PERFORMING				TNG EMPH*	TASK DIFF**
	FIRST JOB (N=173)	FIRST ASGMT (N=325)	DAFSC 54533 (N=229)	DAFSC 54573 (N=169)		
E98 MAKE ENTRIES ON AF FORMS 1445 (MATERIALS AND EQUIPMENT LIST)	25	39	35	53	3.31	3.85
E90 ISSUE OR RECEIVE TOOLS	31	38	39	43	1.95	2.91
E102 MAKE ENTRIES ON AF FORMS 2005 (ISSUE/ TURN IN REQUEST)	15	22	17	34	1.51	3.74
G216 INSTALL PNEUMATIC ACTUATORS	50	49	53	40	5.90	4.55
G219 INSTALL PNEUMATIC RELAYS	46	45	49	38	5.74	4.72
G203 DRAIN AIR TANKS	58	54	59	41	2.64	1.44
H240 ADJUST ELECTRIC SYSTEM RESETS	34	35	35	32	5.82	4.76
K377 INSTALL DURESS ALARM SENSORS	57	59	64	57	5.00	5.09
K378 INSTALL ELECTRONIC CYPHER LOCK SYSTEMS	29	34	34	38	4.36	4.91
L478 INSTRUCT FACILITIES MANAGERS ON PROPER OPERATION OF FIRE CONTROL SYSTEMS	34	36	39	37	3.36	4.52
L481 MODIFY CIRCUIT CARDS TO MEET DESIRED REQUIREMENTS	16	21	22	22	2.87	7.08

* Training Emphasis has an average of 3.24 and standard deviation of 1.51

** Task Difficulty has an average of 5.00 and standard deviation of 1.00

TABLE 16

SAMPLING OF TASKS NOT REFERENCED TO 3ALR54533 POI BLOCKS
WITH 30 PERCENT OR MORE MEMBERS PERFORMING

TASKS	FIRST JOB (N=173)	FIRST ASGMNT (N=325)	TNG EMPH*	TASK DIFF**
F113 ADJUST DAMPER LINKAGES	71	69	5.79	4.78
F119 ADJUST MIXED AIR SYSTEMS	58	57	5.97	6.12
F133 CHECK MECHANICAL OPERATION OF DAMPERS	69	65	5.46	3.36
F111 ADJUST BALANCING VALVES	31	31	4.59	5.21
F117 ADJUST HOT WATER VALVES	47	44	4.56	4.76
G188 ADJUST PNEUMATIC DAMPER OPERATORS	66	61	6.38	4.86
G229 REMOVE OR REPLACE PNEUMATIC ACTUATORS	55	54	5.18	4.31
G235 REMOVE OR REPLACE PNEUMATIC THERMOSTATS	71	65	5.59	4.19
G190 ADJUST PNEUMATIC RELAYS	49	46	6.08	5.11
H239 ADJUST ELECTRIC ACTUATOR MOTORS	44	49	5.87	4.84
H243 CALIBRATE ELECTRIC MOTOR DRIVEN VALVES	33	36	5.64	5.19
H246 CALIBRATE ELECTRICAL CONTROLLERS	35	41	6.72	5.39
K435 REMOVE OR REPLACE ALARM CONTROL UNITS	48	51	4.67	5.20
K448 REMOVE OR REPLACE ULTRASONIC MOTION SENSORS	51	55	4.56	4.73
K436 REMOVE OR REPLACE AUDIBLE ALARMS	32	31	4.15	4.71
K394 ISOLATE MALFUNCTIONS IN DATA TRANSMISSION SYSTEMS	40	44	5.79	6.41
L475 INSTALL END OF LINE DEVICES	64	63	5.05	3.88
L487 PERFORM OPERATIONAL TESTS ON CONTROL PANEL SWITCHES	58	59	5.00	3.85
L472 INSPECT ANNUNCIATOR PANELS	60	58	4.44	4.47
L505 PERFORM PMI ON CODING MECHANISMS	36	38	4.31	4.25
L533 REMOVE OR REPLACE CONTROL PANEL SWITCHES	35	38	3.82	4.12
Q675 ADJUST LIMIT SWITCHES	35	38	3.95	4.01
Q676 ADJUST PRESSURE SWITCHES	34	38	3.95	4.15

* Training Emphasis has an average of 3.24 and standard deviation of 1.51

** Task Difficulty has an average of 5.00 and standard deviation of 1.00

Training center personnel, along with MAJCOM personnel, should refer to the Training Decisions Guidelines, Attachment 1 to Air Training Command (ATC) Regulation 52-22, for information on the use of occupational survey data in making training decisions.

Overall, the current training program appears effective, with first-assignment personnel rendering high positive ratings on utilization of training (see Table 18, JOB SATISFACTION ANALYSIS section).

JOB SATISFACTION ANALYSIS

Job satisfaction is another important area surveyed, analyzed, and reported on in the OSR. A review of job satisfaction indicators can often assist training and utilization personnel in determining trends or identifying perceptions of career ladder members on their work environment, as well as their attitude in areas such as use of training and talents and sense of job accomplishment. Reenlistment intentions are also asked of military members completing the survey instrument and are included in the tables accompanying this section. Job satisfaction data was examined across major specialty jobs and across experience (TICF) groups.

It is important to view career ladder specialty jobs in terms of job satisfaction indicators to determine possible groupings of dissatisfied career ladder members. Table 17 displays how military and civilian incumbents in major specialty jobs responded to background questions pertaining to job satisfaction and how those same military members responded to the reenlistment intent question. The percentages of the specialty job group members responding positively to the job satisfaction indicators were high--with positive responses of 74 percent or greater for all specialty jobs across all satisfaction indicators. In addition, military members of all jobs except the instructor group had desirable responses to the reenlistment intent question (one instructor did not respond to the question--which may indicate indecision at the time of the survey).

A review of data in Table 18 also reveals general satisfaction for military TICF groups, with all experience groups having positive responses of 66 percent or better across both satisfaction indicators and reenlistment intentions. The high percentages of positive responses in both Tables 17 and 18 reflect a career area where personnel appear to be well satisfied with their jobs.

CONUS AND OVERSEAS GROUP COMPARISONS

Comparisons of the background data and tasks performed were made between military personnel assigned within the continental United States (CONUS) and overseas to determine if there are meaningful differences across the two

TABLE 17

**JOB SATISFACTION INDICATORS BY MAJOR SPECIALTY JOBS
(PERCENT MEMBERS RESPONDING)***

	HVAC CONTR PERS (STG048) (N=338)	ALARM CONTR PERS (STG043) (N=155)	J-SIIDS TECHS (STG121) (N=15)	EMCS PERS (STG038) (N=17)	CE CONTR SUPV PERS (STG060) (N=60)	CE CONTR INSTR PERS (STG047) (N=3)
MILITARY AND CIVILIAN						
EXPRESSED JOB INTEREST:						
INTERESTING	91	79	87	94	93	100
SO-SO	6	14	13	6	5	0
DULL	3	6	0	0	2	0
PERCEIVED USE OF TALENTS:						
FAIRLY WELL TO PERFECTLY LITTLE OR NOT AT ALL	91 9	86 13	87 13	94 6	93 7	100 0
PERCEIVED USE OF TRAINING:						
FAIRLY WELL TO PERFECTLY LITTLE OR NOT AT ALL	88 12	78 21	87 13	94 6	88 12	100 0
SENSE OF ACCOMPLISHMENT FROM WORK:						
SATISFIED	83	74	87	82	82	100
NEUTRAL	4	8	13	6	3	0
DISSATISFIED	12	17	0	12	13	0
MILITARY	(N=180)	(N=93)	(N=15)	(N=1)	(N=34)	(N=3)
REENLISTMENT INTENTIONS:						
WILL/PROBABLY WILL REELIST	71	68	87	100	85	33
WILL NOT/PROBABLY WILL NOT						
REENLIST	26	25	13	0	6	33
WILL RETIRE	3	2	0	0	6	0

* Numbers may not add up to 100 percent due to rounding or nonresponses

TABLE 18

**JOB SATISFACTION INDICATORS BY MILITARY T1CF GROUPS
(Percent Members Responding)***

	<u>1-48 MONTHS T1CF (N=325)</u>	<u>49-96 MONTHS T1CF (N=65)</u>	<u>97+ MONTHS T1CF (N=6)</u>
<u>EXPRESSED JOB INTEREST:</u>			
INTERESTING	84	83	67
SO-SO	10	12	33
DULL	6	5	0
<u>PERCEIVED USE OF TALENTS:</u>			
FAIRLY WELL TO PERFECTLY	82	88	100
LITTLE OR NOT AT ALL	18	12	0
<u>PERCEIVED USE OF TRAINING:</u>			
FAIRLY WELL TO PERFECTLY	75	68	83
LITTLE OR NOT AT ALL	24	32	17
<u>SENSE OF ACCOMPLISHMENT FROM WORK:</u>			
SATISFIED	75	68	83
NEUTRAL	7	8	0
DISSATISFIED	17	23	17
<u>REENLISTMENT INTENTIONS:</u>			
WILL/PROBABLY WILL REENLIST	66	74	100
WILL NOT/PROBABLY WILL NOT REENLIST	24	8	0
WILL RETIRE	3	5	0

* Columns may not add up to 100 percent due to rounding or nonresponses

groups. Personnel in CONUS number 334, while those abroad total 64 (16 percent of the military sample). The scope of the job performed by CONUS airmen is somewhat larger (an average of 188 tasks performed versus 144 for overseas airmen). There are some significant differences in time spent on duties and tasks performed for CONUS and overseas members. Table 19 displays the relative time spent across duties by CONUS and overseas personnel. Overseas personnel spend 55 percent of their job time on alarm controls--32 percent of that on intrusion alarms--and only 15 percent of their time on HVAC systems and controls. Their CONUS counterparts spend twice as much time (31 percent) on HVAC-related activities. Table 20 displays several tasks where the difference in percent members performing is greater than 20 percent.

Comparison of general background data reveals little difference in characteristics for the two groups. Additionally, responses to questions relative to job satisfaction were also very similar.

SPECIAL ANALYSIS

In response to requests for a variety of different types of information by the Air Force Engineering and Services Center (AFESC), technical training personnel, and other data users, a series of non-standard background questions was included in the survey instrument. These questions included such items as the percentage of personnel completing various types of vocational training or acquiring certain job experience before enlisting in the Air Force. The response data to these questions are compiled in table format and are presented in Appendix C (Tables C1 through C6).

IMPLICATIONS

Personnel assigned to the CE Controls Systems career ladder generally work in one of two controls maintenance areas--either HVAC controls or alarm controls. Military personnel and civilians are represented in all of the jobs identified in these areas. The only jobs identified in the survey with very limited military representation were those associated with the Energy Monitoring and Control System (EMCS).

This survey was requested by training personnel to obtain current task and equipment information for use in determining the effectiveness of current training programs. Review of the Specialty Training Standard (STS) indicated several areas that require examination for deletion due to low performance response to matched tasks--while also examining tasks not matched, for possible inclusion in any revision of the STS. Review by training managers of survey data, as it pertains to the Plan of Instruction (POI) for ATC course J3ALR54533, is also necessary. Special attention should be given to those numerous tasks not referenced to the POI that are performed 30 percent or more of the first-assignment personnel with consideration given to the training decisions guidelines found in ATC Regulation 52-22.

TABLE 19

RELATIVE PERCENT TIME SPENT ON DUTIES
FOR CONUS AND OVERSEAS PERSONNEL GROUPS

DUTIES	CONUS PERS (N=334)	O/S PERS (N=64)
A ORGANIZING AND PLANNING	4	4
B DIRECTING AND IMPLEMENTING	3	2
C INSPECTING AND EVALUATING	3	3
D TRAINING	3	1
E PERFORMING ADMINISTRATIVE AND SUPPLY FUNCTIONS	4	6
F MAINTAINING HEATING, VENTILATING AND AIR CONDITIONING (HVAC) SYSTEMS	10	7
G MAINTAINING PNEUMATIC HVAC CONTROL SYSTEMS	15	3
H MAINTAINING ELECTRICAL AND ELECTRONIC HVAC CONTROL SYSTEMS	6	5
I MAINTAINING DIRECT DIGITAL CONTROL (DDC) SYSTEMS	1	*
J INSTALLING AND MAINTAINING MONITORING SYSTEMS	4	3
K MAINTAINING INTRUSION ALARM CONTROL SYSTEMS	13	32
L MAINTAINING FIRE ALARM CONTROL SYSTEMS	22	23
M MAINTAINING TRAFFIC CONTROL SYSTEMS	1	1
N MAINTAINING PHOTOVOLTAIC SYSTEMS	*	*
O MAINTAINING BASE SIREN ALERT WARNING SYSTEMS	1	1
P PERFORMING PRIME BEEF PROGRAM FUNCTIONS	6	4
Q INSPECTING MOTOR CONTROLS AND MOTORS	4	4
R PERFORMING GENERAL MAINTENANCE	*	*

* Denotes less than .5 percent

NOTE: Column may not add to 100 percent due to rounding

TABLE 20

DISPLAY OF SIGNIFICANT TASK DIFFERENCES
BETWEEN CONUS AND OVERSEAS GROUPS
(Percent Members Performing)

TASKS	CONUS PERS (N=334)	OVER- SEAS PERS (N=64)	DIFFERENCE
G235 REMOVE OR REPLACE PNEUMATIC THERMOSTATS	71	19	+52
G228 READ AND INTERPRET PNEUMATIC DIAGRAMS	69	17	+52
G195 CALIBRATE PNEUMATIC THERMOSTATS	69	19	+50
G188 ADJUST PNEUMATIC DAMPER OPERATORS	66	20	+46
G229 REMOVE OR REPLACE PNEUMATIC ACTUATORS	60	16	+44
G203 DRAIN AIR TANKS	58	16	+42
G232 REMOVE OR REPLACE PNEUMATIC RELAYS	52	11	+41
G238 TEST PNEUMATIC LINES FOR CRACKS AND LEAKS	54	14	+40
G237 SPLICE COPPER TO PLASTIC TUBING	54	17	+37
F133 CHECK MECHANICAL OPERATION OF DAMPERS	69	33	+36
G225 PERFORM OPERATIONAL TESTS ON PNEUMATIC SYSTEM RESETS	44	8	+36
G234 REMOVE OR REPLACE PNEUMATIC SYSTEM RESETS	40	9	+31
H264 PERFORM OPERATIONAL TESTS ON ELECTRIC- PNEUMATIC SWITCHES	44	16	+28
F134 CHECK MECHANICAL OPERATION OF WATER VALVES	52	25	+27
F117 ADJUST HOT WATER VALVES	47	22	+25
F145 INSPECT DAMPER TRAVEL AND CLOSE OFF	62	38	+24

K410 MAINTAIN HISTORICAL DATA ON INTRUSION ALARM CONTROL SYSTEMS	22	42	-20
K439 REMOVE OR REPLACE DURESS ALARM SYSTEMS	56	77	-21
K401 ISOLATE MALFUNCTIONS IN PASSIVE ULTRASONIC SENSORS	38	59	-21
K448 REMOVE OR REPLACE ULTRASONIC MOTIONS SENSORS	53	75	-22
K451 TEST DATA TRANSMISSION SYSTEM LINES FOR PROPER OPERATIONS	41	66	-25
K416 PERFORM PMI ON DURESS ALARM SENSORS	44	69	-25
K394 ISOLATE MALFUNCTIONS IN DATA TRANSMISSION SYSTEMS	42	67	-25
K429 PERFORM PMI ON ULTRASONIC MOTION SENSORS	40	66	-26
K412 PERFORM PMI ON CAPACITANCE PROXIMITY SENSORS	29	55	-26
K400 ISOLATE MALFUNCTIONS IN MONITORING UNITS	46	73	-27
K414 PERFORM PMI ON DATA TRANSMISSION SYSTEMS	31	61	-30
K438 REMOVE OR REPLACE DATA TRANSMISSION SYSTEMS	37	69	-32

The findings of this OSR come directly from survey data collected from CE Controls Systems members worldwide. These data are readily available to training and utilization personnel, functional managers, and any other interested parties having a need for such information. Much of the data are compiled into extracts which are an excellent tool in the decision-making process. These data extracts should be used whenever a training or utilization decision is made.

APPENDIX A

**SELECTED TASKS AND BACKGROUND
INFORMATION FOR SPECIALTY JOBS**

TABLE A1

GROUP TITLE AND ID NUMBER: HEATING, VENTILATING AND AIR CONDITIONING
(HVAC) CONTROLS PERSONNEL CLUSTER (ST0048)

GROUP SIZE: 338

PERCENT OF SAMPLE: 49%

MEMBERSHIP DISTRIBUTION: Military-54%

Civilian-46%

DAFSC AND OCCUPATIONAL SERIES DISTRIBUTION:

54533 - 35%

3359 - 34%

4749 - 3%

54573 - 19%

2606 - 4%

OTHERS - 5%

LOCATION: CONUS - 86%

PERCENT SUPERVISING: 24%

AVERAGE MONTHS TIME IN PRESENT JOB: 35

AVERAGE MONTHS TIME IN CAREER FIELD: 55

AVERAGE NUMBER OF TASKS PERFORMED: 292

SELECTED TASKS	PERCENT PERFORMING
G228 READ AND INTERPRET PNEUMATIC DIAGRAM	95
F113 ADJUST DAMPER LINKAGES	95
G236 SOLDER ELECTRICAL CONNECTIONS	95
G235 REMOVE OR REPLACT PNEUMATIC THERMOSTATS	95
G188 ADJUST PNEUMATIC DAMPER OPERATORS	94
G229 REMOVE OR REPLACE PNEUMATIC ACTUATORS	94
G212 INSPECT PNEUMATIC ACTUATORS FOR PROPER OPERATION	93
F133 CHECK MECHANICAL OPERATION OF DAMPERS	93
G230 REMOVE OR REPLACE PNEUMATIC DAMPER OPERATORS	93
G195 CALIBRATE PNEUMATIC THERMOSTATS	93
G222 INSTALL PNEUMATIC THERMOSTATS	93
F114 ADJUST DAMPERS	93
G189 ADJUST PNEUMATIC PRESSURE REGULATORS AND SWITCHES	92
G216 INSTALL PNEUMATIC ACTUATORS	90
G233 REMOVE OR REPLACE PNEUMATIC SINGLE INPUT RECEIVER CONTROLLERS	90
F145 INSPECT DAMPER TRAVEL AND CLOSE OFF	90
G231 REMOVE OR REPLACE PNEUMATIC DUAL INPUT RECEIVER CONTROLLERS	90
G217 INSTALL PNEUMATIC DAMPER OPERATORS	89
G220 INSTALL PNEUMATIC SINGLE INPUT RECEIVER CONTROLLERS	89
F170 READ AND INTERPRET WIRING DIAGRAMS	88
G232 REMOVE OR REPLACE PNEUMATIC RELAYS	88
G193 CALIBRATE PNEUMATIC SINGLE INPUT RECEIVER CONTROLLERS	88
G237 SPLICE COPPER TO PLASTIC TUBING	87
G190 ADJUST PNEUMATIC RELAYS	87
G219 INSTALL PNEUMATIC RELAYS	87
G227 PERFORM OPERATIONAL TESTS ON PNEUMATIC-ELECTRIC SWITCHES	87
G224 INSTALL PNEUMATIC-ELECTRIC SWITCHES	86
G218 INSTALL PNEUMATIC DUAL INPUT RECEIVER CONTROLLERS	86
G213 INSPECT PNEUMATIC PRESSURE REGULATORS FOR PROPER OPERATION AND SETTINGS	85
F129 CALIBRATE MIXED AIR SYSTEMS	84
H239 ADJUST ELECTRIC ACTUATOR MOTORS	83

TABLE A2

GROUP TITLE AND ID NUMBER: Instrument Mechanics (ST0217)
 GROUP SIZE: 180 PERCENT OF CLUSTER: 53%
 MEMBERSHIP DISTRIBUTION: MILITARY-30% CIVILIAN-70%
 DAFSC AND OCCUPATIONAL SERIES DISTRIBUTION:
 54533 - 17% 3359 - 51% 4749 - 4% OTHERS - 6%
 54573 - 13% 2606 - 5% 2604 - 4%
 LOCATION: CONUS - 84% PERCENT SUPERVISING: 18%
 AVERAGE MONTHS TIME IN PRESENT JOB: 43
 AVERAGE MONTHS TIME IN CAREER FIELD: 70

AVERAGE NUMBER OF TASKS PERFORMED: 371

SELECTED TASKS	PERCENT PERFORMING
G236 SOLDER ELECTRICAL CONNECTIONS	99
G232 REMOVE OR REPLACE PNEUMATIC RELAYS	98
G228 READ AND INTERPRET PNEUMATIC DIAGRAMS	97
G231 REMOVE OR REPLACE PNEUMATIC DUAL INPUT RECEIVER CONTROLLERS	97
H246 CALIBRATE ELECTRICAL CONTROLLERS	97
G222 INSTALL PNEUMATIC THERMOSTATS	97
G233 REMOVE OR REPLACE PNEUMATIC SINGLE INPUT RECEIVER CONTROLLERS	97
G229 REMOVE OR REPLACE PNEUMATIC ACTUATORS	97
G190 ADJUST PNEUMATIC RELAYS	97
G230 REMOVE OR REPLACE PNEUMATIC DAMPER OPERATORS	97
G227 PERFORM OPERATIONAL TESTS ON PNEUMATIC-ELECTRIC SWITCHES	97
G238 TEST PNEUMATIC LINES FOR CRACKS AND LEAKS	97
G216 INSTALL PNEUMATIC ACTUATORS	97
H284 REMOVE OR REPLACE ELECTRICAL OR ELECTRONIC CONTROLLERS	97
H264 PERFORM OPERATIONAL TESTS ON ELECTRIC-PNEUMATIC SWITCHES	97
G235 REMOVE OR REPLACE PNEUMATIC THERMOSTATS	96
G189 ADJUST PNEUMATIC PRESSURE REGULATORS AND SWITCHES	96
G220 INSTALL PNEUMATIC SINGLE INPUT RECEIVER CONTROLLERS	96
G219 INSTALL PNEUMATIC RELAYS	96
F133 CHECK MECHANICAL OPERATION OF DAMPERS	96
G224 INSTALL PNEUMATIC-ELECTRIC SWITCHES	96
F145 INSPECT DAMPER TRAVEL AND CLOSE OFF	96
G237 SPLICE COPPER TO PLASTIC TUBING	95
H283 REMOVE OR REPLACE ELECTRICAL OR ELECTRONIC HVAC CONTROL SYSTEMS	95
H256 INSTALL ELECTRICAL OR ELECTRONIC CONTROLLED DEVICES	95
H248 CALIBRATE ELECTRONIC SINGLE INPUT CONTROLLERS	94
H265 PERFORM OPERATIONAL TESTS ON ELECTRICAL ACTUATOR MOTORS	94
H239 ADJUST ELECTRIC ACTUATOR MOTORS	94
G225 PERFORM OPERATIONAL TESTS ON PNEUMATIC SYSTEM RESETS	94
F114 ADJUST DAMPERS	94
H245 CALIBRATE ELECTRIC-PNEUMATIC SWITCHES AND SERVOS	94
G193 CALIBRATE PNEUMATIC SIGNAL INPUT RECEIVER CONTROLLERS	93

TABLE A3

GROUP TITLE AND ID NUMBER: Instrument and Controls Shop Foremen
(ST0172)

GROUP SIZE: 14 PERCENT OF CLUSTER: 4%

MEMBERSHIP DISTRIBUTION: MILITARY-71% CIVILIAN-29%

DAFSC AND OCCUPATIONAL SERIES DISTRIBUTION:

54533 - 14% 3359 - 22%

54573 - 57% 5306 - 7%

LOCATION: CONUS - 100% PERCENT SUPERVISING: 93%

AVERAGE MONTHS TIME IN PRESENT JOB: 42

AVERAGE MONTHS TIME IN CAREER FIELD: 90

AVERAGE NUMBER OF TASKS PERFORMED: 365

SELECTED TASKS	PERCENT PERFORMING
A18 PLAN WORK ASSIGNMENTS	100
D71 COUNSEL TRAINEES ON TRAINING PROGRESS	100
D73 DETERMINE OJT REQUIREMENTS	100
G228 READ AND INTERPRET PNEUMATIC DIAGRAMS	100
D80 EVALUATE OJT TRAINEES	100
B23 COUNSEL PERSONNEL ON PERSONAL OR MILITARY-RELATED PROBLEMS	100
D72 DEMONSTRATE HOW TO LOCATE TECHNICAL INFORMATION	100
A21 SCHEDULE LEAVES OR PASSES	100
G212 INSPECT PNEUMATIC ACTUATORS FOR PROPER OPERATION	100
G195 CALIBRATE PNEUMATIC THERMOSTATS	100
F119 ADJUST MIXED AIR SYSTEMS	100
F113 ADJUST DAMPER LINKAGES	100
F114 ADJUST DAMPERS	100
G203 DRAIN AIR TANKS	100
G233 REMOVE OR REPLACE PNEUMATIC SINGLE INPUT RECEIVER CONTROLLERS	100
H246 CALIBRATE ELECTRICAL CONTROLLERS	100
F122 ADJUST VALVE LINKAGES	100
H248 CALIBRATE ELECTRONIC SINGLE INPUT CONTROLLERS	100
A7 DETERMINE WORK PRIORITIES	93
D77 DIRECT OR IMPLEMENT OJT PROGRAMS	93
B32 INTERPRET POLICIES, DIRECTIVES, OR PROCEDURES FOR SUBORDINATES	93
B38 SUPERVISE CIVILIANS	93
D84 PLAN OJT	93
F170 READ AND INTERPRET WIRING DIAGRAMS	93
C42 ANALYZE WORKLOAD REQUIREMENTS	93
C58 INSPECT SHOP EQUIPMENT	93
C57 INSPECT CONDITION OF HANDTOOLS AND SAFETY EQUIPMENT	93
G188 ADJUST PNEUMATIC DAMPER OPERATORS	93
G214 INSPECT PNEUMATIC PRESSURE REGULATORS FOR PROPER OPERATION AND SETTINGS	93
F150 INSPECT MIXED AIR SYSTEMS	93
G192 CALIBRATE PNEUMATIC DUAL INPUT RECEIVER CONTROLLERS	93

TABLE A4

GROUP TITLE AND ID NUMBER: HVAC and Alarm Controls Specialists
(ST0122)

GROUP SIZE: 75

PERCENT OF CLUSTER: 22%

MEMBERSHIP DISTRIBUTION: MILITARY-89%

CIVILIAN-11%

AFSC AND OCCUPATIONAL SERIES DISTRIBUTION:

54533 - 69%

3359 - 11%

54573 - 20%

LOCATION: CONUS - 88%

PERCENT SUPERVISING: 24%

AVERAGE MONTHS TIME IN PRESENT JOB: 27

AVERAGE MONTHS TIME IN CAREER FIELD: 28

AVERAGE NUMBER OF TASKS PERFORMED: 222

SELECTED TASKS	PERCENT PERFORMING
L489 PERFORM OPERATIONAL TESTS ON CONTROL UNITS FOR TROUBLE INDICATIONS(PMI) ON ALARM	96
L488 INITIATING AND INDICATING CIRCUITS AND DEVICES	96
G235 REMOVE OR REPLACE PNEUMATIC THERMOSTATS	96
L546 SHUT DOWN FIRE ALARM CONTROL SYSTEMS FOR CE OR CONTRACTOR MAINTENANCE	96
G188 ADJUST PNEUMATIC DAMPER OPERATORS	96
L469 DISCONNECT SUPERVISORY CIRCUITS TO TEST FOR OPENS, GROUNDS, OR SHORTS	95
G236 SOLDER ELECTRICAL CONNECTIONS	95
L483 PERFORM OPERATIONAL TESTS ON ALARM INITIATING AND INDICATING CIRCUITS AND DEVICES	93
L508 PERFORM PMI ON CONTROL UNITS FOR ALARM INDICATIONS	93
L525 READ AND INTERPRET FIRE ALARM SCHEMATICS AND DRAWINGS	93
L458 CHECK CONNECTIONS FOR CORROSION AND TIGHTNESS	93
G228 READ AND INTERPRET PNEUMATIC DIAGRAMS	93
L475 INSTALL END OF LINE DEVICES	93
L509 PERFORM PMI ON CONTROL UNITS FOR TROUBLE INDICATIONS	92
L473 INSPECT FIRE ALARM CONTROL SYSTEMS FOR CORROSION OR FOREIGN OBJECTS	92
L487 PERFORM OPERATIONS(L) TESTS ON CONTROL PANEL SWITCHES	92
L459 CHECK CONTROL PANELS FOR INOPERATIVE FUSES	92
G222 INSTALL PNEUMATIC THERMOSTATS	92
L539 REMOVE OR REPLACE INOPERATIVE FUSES	92
F133 CHECK MECHANICAL OPERATION OF DAMPERS	92
G212 INSPECT PNEUMATIC ACTUATORS FOR PROPER OPERATION	91
G195 CALIBRATE PNEUMATIC THERMOSTATS	89
G229 REMOVE OR REPLACE PNEUMATIC ACTUATORS	89
L503 PERFORM PERIODIC MAINTENANCE INSPECTIONS (PMI) ON ALARM INITIATING AND INDICATING CIRCUITS AND DEVICES	88
L467 CLEAN CONTROL PANELS, INITIATING, AND SIGNALING DEVICES	88
L476 INSTALL FIRE ALARM CONTROL SYSTEMS	88
G189 ADJUST PNEUMATIC PRESSURE REGULATORS AND SWITCHES	88
F170 READ AND INTERPRET WIRING DIAGRAMS	87

TABLE A5

GROUP TITLE AND ID NUMBER: Pneumatic HVAC Controls Specialists
(ST0093)

GROUP SIZE: 49

PERCENT OF CLUSTER: 15%

MEMBERSHIP DISTRIBUTION: MILITARY-73%

CIVILIAN-27%

DAFSC AND OCCUPATIONAL SERIES DISTRIBUTION:

54533 - 53% 3359 - 20% OTHERS - 3%

54573 - 20% 2606 - 4%

LOCATION: CONUS - 90%

PERCENT SUPERVISING: 18%

AVERAGE MONTHS TIME IN PRESENT JOB: 28

AVERAGE MONTHS TIME IN CAREER FIELD: 37

AVERAGE NUMBER OF TASKS PERFORMED: 133

SELECTED TASKS	PERCENT PERFORMING
G195 CALIBRATE PNEUMATIC THERMOSTATS	98
G212 INSPECT PNEUMATIC ACTUATORS FOR PROPER OPERATION	98
G235 REMOVE OR REPLACE PNEUMATIC THERMOSTATS	96
G228 READ AND INTERPRET PNEUMATIC DIAGRAMS	96
G192 CALIBRATE PNEUMATIC DUAL INPUT RECEIVER CONTROLLERS	96
G188 ADJUST PNEUMATIC DAMPER OPERATORS	96
G231 REMOVE OR REPLACE PNEUMATIC DUAL INPUT RECEIVER CONTROLLERS	96
G229 REMOVE OR REPLACE PNEUMATIC ACTUATORS	96
G230 REMOVE OR REPLACE PNEUMATIC DAMPER OPERATORS	96
G218 INSTALL PNEUMATIC DUAL INPUT RECEIVER CONTROLLERS	96
G222 INSTALL PNEUMATIC THERMOSTATS	94
G233 REMOVE OR REPLACE PNEUMATIC SINGLE INPUT RECEIVER CONTROLLERS	94
G220 INSTALL PNEUMATIC SINGLE INPUT RECEIVER CONTROLLERS	94
F114 ADJUST DAMPERS	94
F113 ADJUST DAMPER LINKAGES	94
G219 INSTALL PNEUMATIC RELAYS	94
G193 CALIBRATE PNEUMATIC SINGLE INPUT RECEIVER CONTROLLERS	92
G232 REMOVE OR REPLACE PNEUMATIC RELAYS	92
G190 ADJUST PNEUMATIC RELAYS	92
F133 CHECK MECHANICAL OPERATION OF DAMPERS	90
G189 ADJUST PNEUMATIC PRESSURE REGULATORS AND SWITCHES	90
G216 INSTALL PNEUMATIC ACTUATORS	90
G224 INSTALL PNEUMATIC-ELECTRIC SWITCHES	90
G237 SPLICE COPPER TO PLASTIC TUBING	90
G217 INSTALL PNEUMATIC DAMPER OPERATORS	90
F145 INSPECT DAMPER TRAVEL AND CLOSE OFF	88
G227 PERFORM OPERATIONAL TESTS ON PNEUMATIC-ELECTRIC SWITCHES	84
F119 ADJUST MIXED AIR SYSTEMS	84
G238 TEST PNEUMATIC LINES FOR CRACKS AND LEAKS	84
F129 CALIBRATE MIXED AIR SYSTEMS	84
F150 INSPECT MIXED AIR SYSTEMS	82
G236 SOLDER ELECTRICAL CONNECTIONS	82
F170 READ AND INTERPRET WIRING DIAGRAMS	80

TABLE A6

GROUP TITLE AND ID NUMBER: ALARM CONTROLS PERSONNEL CLUSTER (ST0043)

GROUP SIZE: 155

PERCENT OF SAMPLE: 22%

MEMBERSHIP DISTRIBUTION: MILITARY-60%

CIVILIAN-40%

DAFSC AND OCCUPATIONAL SERIES DISTRIBUTION:

54533 - 36% 2604 - 19% 2606 - 4%

54573 - 24% 3359 - 10% OTHERS - 7%

LOCATION: CONUS - 70%

PERCENT SUPERVISING: 25%

AVERAGE MONTHS TIME IN PRESENT JOB: 31

AVERAGE MONTHS TIME IN CAREER FIELD: 51

AVERAGE NUMBER OF TASKS PERFORMED: 159

SELECTED TASKS	PERCENT PERFORMING
L488 PERFORM OPERATIONAL TESTS ON CONTROL UNITS FOR ALARM INDICATIONS	95
L475 INSTALL END OF LINE DEVICES	95
L489 PERFORM OPERATIONAL TESTS ON CONTROL UNITS FOR TROUBLE INDICATIONS	95
L469 DISCONNECT SUPERVISORY CIRCUITS TO TEST FOR OPENS, GROUNDS, OR SHORTS	94
L483 PERFORM OPERATIONAL TESTS ON ALARM INITIATING AND INDICATING CIRCUITS AND DIVICES	92
L484 PERFORM OPERATIONAL TESTS ON BATTERY CHARGERS	92
L539 REMOVE OR REPLACE INOPERATIVE FUSES	92
L509 RERFORM PMI ON CONTROL UNITS FOR TROUBLE INDICATIONS	92
L473 INSPECT FIRE ALARM CONTROL SYSTEMS FOR CORROSION OR FOREIGN OBJECTS	91
L508 PERFORM PMI ON CONTROL UNITS FOR ALARM INDICATIONS	90
L476 INSTALL FIRE ALARM CONTROL SYSTEMS	88
L472 INSPECT ANNUNCIATOR PANELS	88
L504 PERFORM PMI ON BATTERY CHARGERS	87
L525 READ AND INTERPRET FIRE ALARM SCHEMATICS AND DRAWINGS	87
L487 PERFORM OPERATIONAL TESTS ON CONTROL PANEL SWITCHES	86
L503 PERFORM PERIODIC MAINTENANCE INSPECTIONS (PMI) ON ALARM INITIATING AND INDICATING CIRCUITS AND DEVICES	85
L546 SHUT DOWN FIRE ALARM CONTROL SYSTEMS FOR CE OR CONTRACTOR MAINTENANCE	84
L459 CHECK CONTROL PANELS FOR INOPERATIVE FUSES	84
L507 PERFORM PMI ON CONTROL PANEL SWITCHES	82
L458 CHECK CONNECTIONS FOR CORROSION AND TIGHTNESS	81
L467 CLEAN CONTROL PANELS, INITIATING, AND SIGNALING DEVICES	80
K377 INSTALL DURESS ALARM SENSORS	79
G236 SOLDER ELECTRICAL CONNECTIONS	78
K396 ISOLATE MALFUNCTIONS IN DURESS ALARM SENSORS	77
L470 EVALUATE CONTRACTOR INSTALLED FIRE ALARM CONTROL SYSTEMS	77
L501 PERFORM OPERATIONAL TESTS ON VOLTAGE TO CONTROL PANELS	76
K439 REMOVE OR REPLACE DURESS ALARM SYSTEMS	76

TABLE A7

GROUP TITLE AND ID NUMBER: Alarm Maintenance Shop NCOICs (ST0159)

GROUP SIZE: 16

PERCENT OF CLUSTER: 10%

MEMBERSHIP DISTRIBUTION: MILITARY-81%

CIVILIAN-19%

DAFSC AND OCCUPATIONAL SERIES DISTRIBUTION:

54533 - 31%

2601 - 6%

2608 - 6%

54573 - 50%

2604 - 6%

LOCATION: CONUS - 50%

PERCENT SUPERVISING: 75%

AVERAGE MONTHS TIME IN PRESENT JOB: 29

AVERAGE MONTHS TIME IN CAREER FIELD: 64

AVERAGE NUMBER OF TASKS PERFORMED: 273

SELECTED TASKS	PERCENT PERFORMING
L489 PERFORM OPERATIONAL TESTS ON CONTROL UNITS FOR TROUBLE INDICATIONS	100
K396 ISOLATE MALFUNCTIONS IN DURESS ALARM SENSORS	100
L517 PERFORM PMI ON POWER SUPPLIES	100
L518 PERFORM PMI ON RECEIVERS	100
L507 PERFORM PMI ON CONTROL PANEL SWITCHES	100
L509 PERFORM PMI ON CONTROL UNITS FOR TROUBLE INDICATIONS	100
K377 INSTALL DURESS ALARM SENSORS	100
K439 REMOVE OR REPLACE DURESS ALARM SYSTEMS	100
K387 INSTALL ULTRASONIC MOTION SENSORS	100
C44 EVALUATE COMPLETED OR WORK IN PROGRESS FOR COMPLIANCE WITH SPECIFICATIONS OR STANDARDS	94
L525 READ AND INTERPRET FIRE ALARM SCHEMATICS AND DRAWINGS	94
L488 PERFORM OPERATIONAL TESTS ON CONTROL UNITS FOR ALARM INDICATIONS	94
K393 ISOLATE MALFUNCTIONS IN CONTROL UNITS	94
L469 DISCONNECT SUPERVISORY CIRCUITS TO TEST FOR OPENS, GROUNDS, OR SHORTS	94
L501 PERFORM OPERATIONAL TESTS ON VOLTAGE TO CONTROL PANELS	94
L497 PERFORM OPERATIONAL TESTS ON POWER SUPPLIES	94
B33 INVENTORY EQUIPMENT, TOOLS, OR SUPPLIES	94
K366 BENCH REPAIR INTRUSION ALARM CONTROL SYSTEMS	94
K413 PERFORM PMI ON CENTRAL STATION SECURITY SYSTEMS	94
L470 EVALUATE CONTRACTOR INSTALLED FIRE ALARM CONTROL SYSTEMS	94
K392 ISOLATE MALFUNCTIONS IN CENTRAL STATION SECURITY SYSTEMS	94
L504 PERFORM PMI ON BATTERY CHARGERS	94
K448 REMOVE OR REPLACE ULTRASONIC MOTION SENSORS	94
L542 REMOVE OR REPLACE LIGHT EMITTING DIODES (LED) AND LAMPS	94
A7 DETERMINE WORK PRIORITIES	88
A9 DEVELOP WORK METHODS OR PROCEDURES	88
K420 PERFORM PMI ON INTRUSION ALARM CONTROLS	88
L483 PERFORM OPERATIONAL TESTS ON ALARM INITIATING AND INDICATING CIRCUITS AND DEVICES	88
X58 INSPECT SHOP EQUIPMENT	88

TABLE A8

GROUP TITLE AND ID NUMBER: Alarm Electronics Mechanics (ST0165)

GROUP SIZE: 79

PERCENT OF CLUSTER: 51%

MEMBERSHIP DISTRIBUTION: MILITARY-35%

CIVILIAN-65%

DAFSC AND OCCUPATIONAL SERIES DISTRIBUTION:

54533 - 18% 2604 - 34% 2606 - 6% OTHERS - 5%

54573 - 17% 3359 - 16% 2608 - 4%

LOCATION: CONUS - 73%

PERCENT SUPERVISING: 16%

AVERAGE MONTHS TIME IN PRESENT JOB: 41

AVERAGE MONTHS TIME IN CAREER FIELD: 57

AVERAGE NUMBER OF TASKS PERFORMED: 173

SELECTED TASKS	PERCENT PERFORMING
L475 INSTALL END OF LINE DEVICES	100
L488 PERFORM OPERATIONAL TESTS ON CONTROL UNITS FOR ALARM INDICATIONS	99
L469 DISCONNECT SUPERVISORY CIRCUITS TO TEST FOR OPENS, GROUNDS, OR SHORTS	97
L489 PERFORM OPERATIONAL TESTS ON CONTROL UNITS FOR TROUBLE INDICATIONS	97
L509 PERFORM PMI ON CONTROL UNITS FOR TROUBLE INDICATIONS	97
L508 PERFORM PMI ON CONTROL UNITS FOR ALARM INDICATIONS	97
L539 REMOVE OR REPLACE INOPERATIVE FUSES	97
L503 PERFORM PERIODIC MAINTENANCE INSPECTIONS (PMI) ON ALARM INITIATING AND INDICATING CIRCUITS AND DEVICES	96
L483 PERFORM OPERATIONAL TESTS ON ALARM INITIATING AND INDICATING CIRCUITS AND DEVICES	96
L472 INSPECT ANNUNCIATOR PANELS	96
L473 INSPECT FIRE ALARM CONTROL SYSTEMS FOR CORROSION OR FOREIGN OBJECTS	95
L487 PERFORM OPERATIONAL TESTS ON CONTROL PANEL SWITCHES	95
L484 PERFORM OPERATIONAL TESTS ON BATTERY CHARGERS	94
L476 INSTALL FIRE ALARM CONTROL SYSTEMS	94
L504 PERFORM PMI ON BATTERY CHARGERS	94
L542 REMOVE OR REPLACE LIGHT EMITTING DIODES (LED) AND LAMPS	92
L525 READ AND INTERPRET FIRE ALARM SCHEMATICS AND DRAWINGS	91
L458 CHECK CONNECTIONS FOR CORROSION AND TIGHTNESS	90
L543 REMOVE OR REPLACE LOW VOLTAGE TRANSFORMERS	90
L467 CLEAN CONTROL PANELS, INITIATING, AND SIGNALING DEVICES	87
L470 EVALUATE CONTRACTOR INSTALLED FIRE ALARM CONTROL SYSTEMS	86
K396 ISOLATE MALFUNCTIONS IN DURESS ALARM SENSORS	85
K374 INSTALL CONTROL UNITS	84
L517 PERFORM PMI ON POWER SUPPLIES	82
G236 SOLDER ELECTRICAL COMPONENTS	82
K377 INSTALL DURESS ALARM SENSORS	82
L480 MAKE MINOR REPAIRS ON HARDWARE CARDS	82
L541 REMOVE OR REPLACE LAMP SOCKETS	82

TABLE A9

GROUP TITLE AND ID NUMBER: Fire Alarm Controls Specialists (ST0082)

GROUP SIZE: 32

PERCENT OF CLUSTER: 21%

MEMBERSHIP DISTRIBUTION: MILITARY-81%

CIVILIAN-19%

DAFSC AND OCCUPATIONAL SERIES DISTRIBUTION:

54533 - 69%

3359 - 9%

4749 - 3%

54573 - 12%

2604 - 6%

LOCATION: CONUS - 75%

PERCENT SUPERVISING: 12%

AVERAGE MONTHS TIME IN PRESENT JOB: 20

AVERAGE MONTHS TIME IN CAREER FIELD: 47

AVERAGE NUMBER OF TASKS PERFORMED: 86

SELECTED TASKS	PERCENT PERFORMING
L488 PERFORM OPERATIONAL TESTS ON CONTROL UNITS FOR ALARM INDICATIONS	100
L484 PERFORM OPERATIONAL TESTS ON BATTERY CHARGERS	94
L508 PERFORM PMI ON CONTROL UNITS FOR ALARM INDICATIONS	94
L539 REMOVE OR REPLACE INOPERATIVE FUSES	94
L483 PERFORM OPERATIONAL TESTS ON ALARM INITIATING AND INDICATING CIRCUITS AND DEVICES	91
L489 PERFORM OPERATIONAL TESTS ON CONTROL UNITS FOR TROUBLE INDICATIONS	91
L473 INSPECT FIRE ALARM CONTROL SYSTEMS FOR CORROSION OR FOREIGN OBJECTS	91
L509 PERFORM PMI ON CONTROL UNITS FOR TROUBLE INDICATIONS	91
L487 PERFORM OPERATIONAL TESTS ON CONTROL PANEL SWITCHES	91
L525 READ AND INTERPRET FIRE ALARM SCHEMATICS AND DRAWINGS	91
L546 SHUTDOWN FIRE ALARM CONTROL SYSTEMS FOR CE OR CONTRACTOR MAINTENANCE	88
L504 PERFORM PMI ON BATTERY CHARGERS	84
L507 PERFORM PMI ON CONTROL PANEL SWITCHES	84
L469 DISCONNECT SUPERVISORY CIRCUITS TO TEST FOR OPENS, GROUNDS, OR SHORTS	84
L476 INSTALL FIRE ALARM CONTROL SYSTEMS	84
L475 INSTALL END OF LINE DEVICES	84
L472 INSPECT ANNUNCIATOR PANELS	81
L459 CHECK CONTROL PANELS FOR INOPERATIVE FUSES	81
L503 PERFORM PERIODIC MAINTENANCE INSPECTIONS (PMI) ON ALARM INITIATING AND INDICATING CIRCUITS AND DEVICES	78
L467 CLEAN CONTROL PANELS, INITIATING, AND SIGNALING DEVICES	75
L485 PERFORM OPERATIONAL TESTS ON CODING MECHANISMS	72
L458 CHECK CONNECTIONS FOR CORROSION AND TIGHTNESS	72
L505 PERFORM PMI ON CODING MECHANISMS	72
L506 PERFORM PMI ON CONTROL PANEL AMMETERS AND VOLTMETERS	66
L499 PERFORM OPERATIONAL TESTS TELEPHONE TRANSMISSION LINES BETWEEN TRANSMITTERS AND RECEIVERS	66
G236 SOLDER ELECTRICAL CONNECTIONS	62

TABLE A10

GROUP TITLE AND ID: JOINT-SERVICES INTERIOR INTRUSION DETECTION
SYSTEM (J-SIIDS) TECHNICIANS (ST0121)

GROUP SIZE: 15 PERCENT OF SAMPLE: 2%

MEMBERSHIP DISTRIBUTION: MILITARY-100% CIVILIAN-NONE

DAFSC AND OCCUPATIONAL SERIES DISTRIBUTION:

54533 - 47%

54573 - 53%

LOCATION: OVERSEAS - 93% PERCENT SUPERVISING: 27%

AVERAGE MONTHS TIME IN PRESENT JOB: 13

AVERAGE MONTHS TIME IN CAREER FIELD: 37

AVERAGE NUMBER OF TASKS PERFORMED: 76

SELECTED TASKS	PERCENT PERFORMING
K393 ISOLATE MALFUNCTION IN CONTROL UNITS	100
K377 INSTALL DURESS ALARM SENSORS	100
K416 PERFORM PMI ON DURESS ALARM SENSORS	100
K374 INSTALL CONTROL UNITS	100
K387 INSTALL ULTRASONIC MOTION SENSORS	100
K439 REMOVE OR REPLACE DURESS ALARM SYSTEMS	100
K435 REMOVE OR REPLACE ALARM CONTROL UNITS	100
K394 ISOLATE MALFUNCTIONS IN DATA TRANSMISSION SYSTEMS	93
K375 INSTALL DATA TRANSMISSION SYSTEMS	93
K396 ISOLATE MALFUNCTIONS IN DURESS ALARM SENSORS	93
K403 ISOLATE MALFUNCTIONS IN ULTRASONIC MOTION SENSORS	93
K448 REMOVE OR REPLACE ULTRASONIC MOTION SENSORS	93
K438 REMOVE OR REPLACE DATA TRANSMISSION SYSTEMS	93
K414 PERFORM PMI ON DATA TRANSMISSION SYSTEMS	93
K383 INSTALL MONITORING UNITS	93
K429 PERFORM PMI ON ULTRASONIC MOTION SENSORS	87
K384 INSTALL PASSIVE ULTRASONIC SENSORS	87
K451 TEST DATA TRANSMISSION SYSTEM LINES FOR PROPER OPERATION	87
K372 INSTALL CAPACITANCE PROXIMITY SENSORS	87
K400 ISOLATE MALFUNCTIONS IN MONITORING UNITS	87
K401 ISOLATE MALFUNCTIONS IN PASSIVE ULTRASONIC SENSORS	80
K366 BENCH REPAIR INTRUSION ALARM CONTROL SYSTEMS	80
P632 DON CHEMICAL WARFARE PERSONAL PROTECTIVE CLOTHING	73
K420 PERFORM PMI ON INTRUSION ALARM CONTROLS	73
K412 PERFORM PMI ON CAPACITANCE PROXIMITY SENSORS	73
K391 ISOLATE MALFUNCTIONS IN CAPACITANCE PROXIMITY SENSORS	73
K425 PERFORM PMI ON MONITORING UNITS	73
K437 REMOVE OR REPLACE CAPACITANCE PROXIMITY SENSORS	73
K446 REMOVE OR REPLACE PASSIVE ULTRASONIC SENSORS	73
P636 FIRE M-16 RIFLES	73
K426 PERFORM PMI ON PASSIVE ULTRASONIC SENSORS	60
K410 MAINTAIN HISTORICAL DATA ON INTRUSION ALARM CONTROL SYSTEMS	60
P634 ERECT TENTS	60
K369 DESIGN INTRUSION AND DURESS ALARM CONTROL SYSTEMS	53

TABLE A11

GROUP TITLE AND ID NUMBER: ENERGY MONITORING AND CONTROL SYSTEMS
(EMCS) PERSONNEL CLUSTER (ST0038)

GROUP SIZE: 17

PERCENT OF SAMPLE: 2%

MEMBERSHIP DISTRIBUTION: MILITARY-6%

CIVILIAN-94%

DAFSC AND OCCUPATIONAL SERIES DISTRIBUTION:

54533 - 0% 0802 - 35% 2606 - 18% 2610 - 5%

54573 - 6% 2604 - 18% 2608 - 18%

LOCATION: CONUS - 94%

PERCENT SUPERVISING: 12%

AVERAGE MONTHS TIME IN PRESENT JOB: 46

AVERAGE MONTHS TIME IN CAREER FIELD: 69

AVERAGE NUMBER OF TASKS PERFORMED: 121

SELECTED TASKS	PERCENT PERFORMING
J352 ISOLATE MALFUNCTIONS TO EMCS TEMPERATURE SENSORS	100
J349 ISOLATE MALFUNCTIONS TO EMCS FLOW SENSORS	100
J346 ISOLATE MALFUNCTIONS TO ELECTRONIC TEMPERATURE SENSORS	94
H276 PERFORM OPERATIONAL TESTS ON EMCS COMMUNICATIONS LINES	82
H271 PERFORM OPERATIONAL TESTS ON ELECTRONIC INTERFACE DEVICES	82
J333 INSTALL ELECTRONIC TEMPERATURE SENSORS	82
J355 REMOVE OR REPLACE EMCS ELECTRONIC TEMPERATURE SENSORS	82
J340 INSTALL EMCS TEMPERATURE SENSORS	82
J350 ISOLATE MALFUNCTIONS TO EMCS HUMIDITY SENSORS	82
J360 REMOVE OR REPLACE EMCS TEMPERATURE SENSORS	76
F170 READ AND INTERPRET WIRING DIAGRAMS	76
J348 ISOLATE MALFUNCTIONS TO EMCS ELECTRIC MEASURING SENSORS	71
J326 CALIBRATE EMCS TEMPERATURE SENSORS	71
H278 PERFORM OPERATIONAL TESTS ON HVAC ELECTRICAL AND ELECTRONIC CONTROL POWER SUPPLIES	71
J351 ISOLATE MALFUNCTIONS TO EMCS POSITION SENSORS	71
I292 CALIBRATE SENSOR INPUTS	71
J345 ISOLATE MALFUNCTIONS IN EMCS PRESSURE SENSORS	71
J322 CALIBRATE EMCS FLOW SENSORS	71
J359 REMOVE OR REPLACE EMCS PRESSURE SENSORS	71
J356 REMOVE OR REPLACE EMCS FLOW SENSORS	71
G236 SOLDER ELECTRICAL CONNECTIONS	65
J314 ADJUST EMCS TEMPERATURE SENSORS	65
H268 PERFORM OPERATIONAL TESTS ON ELECTRICAL OR ELECTRONIC CONTROLLED DEVICES	65
J310 ADJUST EMCS FLOW SENSORS	65
J347 ISOLATE MALFUNCTIONS TO EMCS DEWPOINT SENSORS	65
J357 REMOVE OR REPLACE EMCS HUMIDITY SENSORS	65
L459 CHECK CONTROL PANELS FOR INOPERATIVE FUSES	65
L539 REMOVE OR REPLACE INOPERATIVE FUSES	65
E98 MAKE ENTRIES ON AF FORMS 1445 (MATERIALS AND EQUIPMENT LIST)	59
E101 MAKE ENTRIES ON AF FORMS 1879 (BCE JOB ORDER RECORD)	59
I303 PERFORM OPERATIONAL TESTS ON DDC CONTROLLED DEVICES	59
L480 MAKE MINOR REPAIRS ON HARDWARE CARDS	59

TABLE A12

GROUP TITLE AND ID NUMBER: Industrial Controls Mechanics (ST0087)

GROUP SIZE: 5

PERCENT OF CLUSTER: 29%

MEMBERSHIP DISTRIBUTION: MILITARY-NONE

CIVILIAN-100%

DAFSC AND OCCUPATIONAL SERIES DISTRIBUTION:

2606 - 60%

2604 - 40%

LOCATION: CONUS - 100%

PERCENT SUPERVISION: NONE

AVERAGE MONTHS TIME IN PRESENT JOB: 40

AVERAGE MONTHS TIME IN CAREER FIELD: 44

AVERAGE NUMBER OF TASKS PERFORMED: 142

SELECTED TASKS	PERCENT PERFORMING
F166 PERFORM OPERATIONAL TESTS ON DGP COMPONENTS	100
H276 PERFORM OPERATIONAL TESTS ON EMCS COMMUNICATIONS LINES	100
G236 SOLDER ELECTRICAL CONNECTIONS	100
L480 MAKE MINOR REPAIRS ON HARDWARE CARDS	100
J346 ISOLATE MALFUNCTIONS TO ELECTRONIC TEMPERATURE SENSORS	100
J319 CALIBRATE ELECTRONIC TEMPERATURE SENSORS	100
J352 ISOLATE MALFUNCTIONS TO EMCS TEMPERATURE SENSORS	100
H278 PERFORM OPERATIONAL TESTS ON HVAC ELECTRICAL AND ELECTRONIC CONTROL POWER SUPPLIES	100
J360 REMOVE OR REPLACE EMCS TEMPERATURE SENSORS	100
J314 ADJUST EMCS TEMPERATURE SENSORS	100
J355 REMOVE OR REPLACE EMCS ELECTRONIC TEMPERATURE SENSORS	100
J333 INSTALL ELECTRONIC TEMPERATURE SENSORS	100
J326 CALIBRATE EMCS TEMPERATURE SENSORS	100
I292 CALIBRATE SENSOR INPUTS	100
J310 ADJUST EMCS FLOW SENSORS	100
H256 INSTALL ELECTRICAL OR ELECTRONIC CONTROLLED DEVICES	100
H283 REMOVE OR REPLACE ELECTRICAL OR ELECTRONIC HVAC CONTROL SYSTEMS	100
J349 ISOLATE MALFUNCTIONS TO EMCS FLOW SENSORS	100
H271 PERFORM OPERATIONAL TESTS ON ELECTRONIC INTERFACE DEVICES	100
H284 REMOVE OR REPLACE ELECTRICAL OR ELECTRONIC CONTROLLERS	100
J309 ADJUST EMCS ELECTRIC MEASURING SENSORS	100
J322 CALIBRATE EMCS FLOW SENSORS	100
J312 ADJUST EMCS POSITION SENSORS	100
F162 ISOLATE MALFUNCTIONS TO PRINTED CIRCUIT CARDS IN DATA GATHERING PANELS (DGP)	80
F180 REMOVE OR REPLACE PRINTED CIRCUIT CARDS IN DGP	80
F170 READ AND INTERPRET WIRING DIAGRAMS	80
H252 CALIBRATE HVAC ELECTRONIC INTERFACE DEVICES	80
H266 PERFORM OPERATIONAL TESTS ON ELECTRICAL AND ELECTRONIC POWER SUPPLIES	80
J313 ADJUST EMCS PRESSURE SENSORS	80
Q756 REMOVE OR REPLACE FLOW OR SAIL SWITCHES	80

TABLE A13

GROUP TITLE AND ID NUMBER: EMCS Engineering Technicians (ST0068)
 GROUP SIZE: 5 PERCENT OF CLUSTER: 29%
 MEMBERSHIP DISTRIBUTION: MILITARY-NONE CIVILIAN-100%

DAFSC AND OCCUPATIONAL SERIES DISTRIBUTION:

0802 - 60% 2608 - 20%
 2604 - 20%

LOCATION: CONUS - 100% PERCENT SUPERVISING: 20%

AVERAGE MONTHS TIME IN PRESENT JOB: 40
 AVERAGE MONTHS TIME IN CAREER FIELD: 115

AVERAGE NUMBER OF TASKS PERFORMED: 89

SELECTED TASKS	PERCENT PERFORMING
H276 PERFORM OPERATIONAL TESTS ON EMCS COMMUNICATIONS LINES	100
H271 PERFORM OPERATIONAL TESTS ON ELECTRONIC INTERFACE DEVICES	100
J349 ISOLATE MALFUNCTIONS TO EMCS FLOW SENSORS	100
J352 ISOLATE MALFUNCTIONS TO EMCS TEMPERATURE SENSORS	100
A9 DEVELOP WORK METHODS OR PROCEDURES	100
J348 ISOLATE MALFUNCTIONS TO EMCS ELECTRIC MEASURING SENSORS	100
J346 ISOLATE MALFUNCTIONS TO ELECTRONIC TEMPERATURE SENSORS	100
H268 PERFORM OPERATIONAL TESTS ON ELECTRICAL OR ELECTRONIC CONTROLLED DEVICES	100
J351 ISOLATE MALFUNCTIONS TO EMCS POSITION SENSORS	100
F170 READ AND INTERPRET WIRING DIAGRAMS	100
E101 MAKE ENTRIES ON AF FORMS 1879 (BCE JOB ORDER RECORD)	80
I303 PERFORM OPERATIONAL TESTS ON DDC CONTROLLED DEVICES	80
B24 DIRECT DEVELOPMENT OR MAINTENANCE OF STATUS BOARDS, GRAPHS, OR CHARTS	80
I297 ISOLATE MALFUNCTIONS TO CIRCUIT BOARDS IN DDC SYSTEMS	80
A7 DETERMINE WORK PRIORITIES	80
I300 MAINTAIN HISTORICAL DATA FOR DDC SYSTEMS	80
I293 CHECK STATUS OF DDC CONTROLLED DEVICES	80
F139 DESIGN AND PREPARE HVAC SYSTEMS GRAPHS, SCHEDULES, AND CHARTS	80
I298 ISOLATE MALFUNCTIONS TO DDC SYSTEMS	80
F187 SHUT DOWN HVAC SYSTEMS FOR CE OR CONTRACTOR MAINTENANCE	80
I292 CALIBRATE SENSOR INPUTS	80
J321 CALIBRATE EMCS ELECTRIC MEASURING SENSORS	80
H267 PERFORM OPERATIONAL TESTS ON ELECTRICAL INTERFACE DEVICES	80
J322 CALIBRATE EMCS FLOW SENSORS	80
J326 CALIBRATE EMCS TEMPERATURE SENSORS	80
I304 PERFORM SYSTEM UPDATE OF SOFTWARE PROGRAMS	80
H272 PERFORM OPERATIONAL TESTS ON ELECTRONIC PNEUMATIC SWITCHES	80
G236 SOLDER ELECTRICAL CONNECTIONS	80
I296 EXECUTE OVERRIDES OF SIGNALS TO DDC CONTROLLER DEVICES	80
I294 DUPLICATE SOFTWARE PROGRAMS	80
B33 INVENTORY EQUIPMENT, TOOLS, OR SUPPLIES	80

TABLE A14

GROUP TITLE AND ID NUMBER: CE CONTROLS SUPERVISORY PERSONNEL (ST0060)

GROUP SIZE: 60

PERCENT OF SAMPLE: 9%

MEMBERSHIP DISTRIBUTION: MILITARY-57%

CIVILIAN-43%

DAFSC AND OCCUPATIONAL SERIES DISTRIBUTION:

54533 - 7% 3359 - 18% 2604 - 7%

54573 - 50% 2606 - 8% OTHERS - 10%

LOCATION: CONUS - 80%

PERCENT SUPERVISING: 80%

AVERAGE MONTHS TIME IN PRESENT JOB: 34

AVERAGE MONTHS TIME IN CAREER FIELD: 67

AVERAGE NUMBER OF TASKS PERFORMED: 102

SELECTED TASKS	PERCENT PERFORMING
B23 COUNSEL PERSONNEL ON PERSONAL OR MILITARY-RELATED PROBLEMS	92
A21 SCHEDULE LEAVES OR PASSES	92
C58 INSPECT SHOP EQUIPMENT	92
A7 DETERMINE WORK PRIORITIES	90
A18 PLAN WORK ASSIGNMENTS	90
C57 INSPECT CONDITION OF HANDTOOLS AND SAFETY EQUIPMENT	90
C44 EVALUATE COMPLETED OR WORK IN PROGRESS FOR COMPLIANCE WITH SPECIFICATIONS OR STANDARDS	88
B32 INTERPRET POLICIES, DIRECTIVES, OR PROCEDURES FOR SUBORDINATES	87
B33 INVENTORY EQUIPMENT, TOOLS, OR SUPPLIES	87
C59 INSPECT SHOP FACILITIES	87
E89 COORDINATE MATERIAL OR WORK ORDER STATUS WITH MATERIEL CONTROL	85
A1 ASSIGN PERSONNEL TO DUTY POSITIONS	85
B38 SUPERVISE CIVILIANS	83
A12 ESTABLISH PERFORMANCE STANDARDS FOR SUBORDINATES	83
B36 SUPERVISE CE CONTROL SYSTEMS SPECIALISTS (AFSC 54533)	82
D73 DETERMINE OJT REQUIREMENTS	82
C62 SELECT INDIVIDUALS FOR SPECIALIZED TRAINING	82
B40 WRITE CORRESPONDENCE	80
E104 MAKE ENTRIES ON AF FORMS 561 (BCE WEEKLY SCHEDULE)	80
C61 PREPARE APR	80
D68 CONDUCT OJT	80
C46 EVALUATE INDIVIDUALS FOR PROMOTION, DEMOTION, OR RECLASSIFICATION	78
A3 DETERMINE COMPLETION TIME ESTIMATES FOR FABRICATION OR REPAIR	78
A9 DEVELOP WORK METHODS OR PROCEDURES	78
E92 MAINTAIN RECORDS AND OWNERS MANUALS ON ALL MECHANICAL EQUIPMENT	78
C42 ANALYZE WORKLOAD REQUIREMENTS	77
C45 EVALUATE COMPLIANCE WITH PERFORMANCE STANDARDS	75
D80 EVALUATE OJT TRAINEES	75

TABLE A15

GROUP TITLE AND ID NUMBER: CE CONTROLS INSTRUCTOR PERSONNEL (ST0047)

GROUP SIZE: 3

PERCENT OF SAMPLE: less than 1%

MEMBERSHIP DISTRIBUTION: MILITARY-100% CIVILIAN-NONE

DAFSC AND OCCUPATIONAL SERIES DISTRIBUTION:

54533 - 100%

LOCATION: CONUS - 100%

PERCENT SUPERVISING: 33%

AVERAGE MONTHS TIME IN PRESENT JOB: 17

AVERAGE MONTHS TIME IN CAREER FIELD: 33

AVERAGE NUMBER OF TASKS PERFORMED: 42

SELECTED TASKS	PERCENT PERFORMING
D69 CONDUCT RESIDENT COURSE CLASSROOM TRAINING	100
D81 EVALUATE PROGRESS OF RESIDENT COURSE STUDENTS	100
D75 DEVELOP RESIDENT COURSE CAREER DEVELOPMENT COURSE (CDC) CURRICULUM MATERIALS	100
D65 ADMINISTER TESTS	100
D86 SCORE TESTS	100
D74 DETERMINE RESIDENT COURSE TRAINING REQUIREMENTS	100
D82 EVALUATE TRAINING METHODS OR TECHNIQUES	100
D87 WRITE TEST QUESTIONS	100
D85 PROCURE TRAINING AIDS, SPACE, OR EQUIPMENT	100
F170 READ AND INTERPRET WIRING DIAGRAMS	100
D76 DEVELOP SUPPLEMENTAL COURSES (ADVANCED COURSES)	67
G193 CALIBRATE PNEUMATIC SINGLE INPUT RECEIVER CONTROLLERS	67
G192 CALIBRATE PNEUMATIC DUAL INPUT RECEIVER CONTROLLERS	67
G195 CALIBRATE PNEUMATIC THERMOSTATS	67
I292 CALIBRATE SENSOR INPUTS	67
H248 CALIBRATE ELECTRONIC SINGLE INPUT CONTROLLERS	67
H247 CALIBRATE ELECTRONIC DUAL INPUT CONTROLLERS	67
G228 READ AND INTERPRET PNEUMATIC DIAGRAMS	67
B33 INVENTORY EQUIPMENT, TOOLS, OR SUPPLIES	67
B23 COUNSEL PERSONNEL ON PERSONAL OR MILITARY-RELATED PROBLEMS	67
G194 CALIBRATE PNEUMATIC SYSTEM RESETS	33
D72 DEMONSTRATE HOW TO LOCATE TECHNICAL INFORMATION	33
A9 DEVELOP WORK METHODS OR PROCEDURES	33
B26 DIRECT UTILIZATION OF EQUIPMENT	33

APPENDIX B

TASK DESCRIPTIONS FOR
CIVILIAN OCCUPATIONAL JOB SERIES

TABLE B1

OCCUPATIONAL JOB SERIES: 0802

OCCUPATIONAL TITLE: ENGINEERING TECHNICIAN

GROUP SIZE: 22 PERCENT: Of Sample - 3% Of Civilian - 8%

TASKS IN DESCENDING ORDER OF PERCENT MEMBERS PERFORMING:

TASKS	PERCENT MEMBERS PERFORMING
E101 MAKE ENTRIES ON AF FORMS 1879 (BCE JOB ORDER RECORD)	73
F187 SHUT DOWN HVAC SYSTEMS FOR CE OR CONTRACTOR MAINTENANCE	68
A7 DETERMINE WORK PRIORITIES	68
H276 PERFORM OPERATIONAL TESTS ON EMCS COMMUNICATIONS LINES	63
I294 DUPLICATE SOFTWARE PROGRAMS	59
B24 DIRECT DEVELOPMENT OR MAINTENANCE OF STATUS BOARDS, GRAPHS, OR CHARTS	59
A3 DETERMINE COMPLETION TIME ESTIMATES FOR FABRICATION OR REPAIR	55
A18 PLAN WORK ASSIGNMENTS	55
A5 DETERMINE MAN-HOUR ESTIMATES FOR FABRICATION OR REPAIR	50
H271 PERFORM OPERATIONAL TESTS ON ELECTRONIC INTERFACE DEVICES	50
E89 COORDINATE MATERIAL OR WORK ORDER STATUS WITH MATERIEL CONTROL	50
B26 DIRECT UTILIZATION OF EQUIPMENT	50
I306 PROGRAM SYSTEM SOFTWARE FOR MISSION REQUIREMENTS	45
E100 MAKE ENTRIES ON AF FORMS 1734 (BCE DAILY WORK SCHEDULE)	45
I304 PERFORM SYSTEM UPDATE OF SOFTWARE PROGRAMS	45
I293 CHECK STATUS OF DDC CONTROLLED DEVICES	45
B33 INVENTORY EQUIPMENT, TOOLS, OR SUPPLIES	45
F117 ADJUST HOT WATER VALVES	41
F121 ADJUST STEAM VALVES	41
I301 OPERATE DDC SYSTEMS	41
I303 PERFORM OPERATIONAL TESTS ON DDC CONTROLLED DEVICES	41
C44 EVALUATE COMPLETED OR WORK IN PROGRESS FOR COMPLIANCE WITH SPECIFICATIONS OR STANDARDS	41
H268 PERFORM OPERATIONAL TESTS ON ELECTRICAL OR ELECTRONIC CONTROLLED DEVICES	41
I298 ISOLATE MALFUNCTIONS TO DDC SYSTEMS	41
B40 WRITE CORRESPONDENCE	41
H278 PERFORM OPERATIONAL TESTS ON HVAC ELECTRICAL AND ELECTRONIC CONTROL POWER SUPPLIES	41
I299 LOAD SOFTWARE PROGRAMS TO DDC SYSTEMS	36
E104 MAKE ENTRIES ON AF FORMS 561 BCE WEEKLY SCHEDULE)	36
F139 DESIGN AND PREPARE HVAC SYSTEMS GRAPHS, SCHEDULES, AND CHARTS	36
H264 PERFORM OPERATIONAL TESTS ON ELECTRIC-PNEUMATIC SWITCHES	36

TABLE B2

OCCUPATIONAL JOB SERIES: 2604

OCCUPATIONAL TITLE: ELECTRONICS MECHANIC

GROUP SIZE: 45 **PERCENT: Of Sample - 7%** **Of Civilians - 15%**

TASKS IN DESCENDING ORDER OF PERCENT MEMBERS PERFORMING:

TASKS	PERCENT MEMBERS PERFORMING
L539 REMOVE OR REPLACE INOPERATIVE FUSES	89
L469 DISCONNECT SUPERVISORY CIRCUITS TO TEST FOR OPENS, GROUND, OR SHORTS	87
L497 PERFORM OPERATIONAL TESTS ON POWER SUPPLIES	87
L542 REMOVE OR REPLACE LIGHT EMITTING DIODES (LED) AND LAMPS	87
L525 READ AND INTERPRET FIRE ALARM SCHEMATICS AND DRAWINGS	84
L483 PERFORM OPERATIONAL TESTS ONALARM INITIATING AND INDICATING CIRCUITS AND DEVICES	84
L488 PERFORM OPERATIONAL TESTS ON CONTROL UNITS FOR ALARM INDICATIONS	84
L476 INSTALL FIRE ALARM CONTROL SYSTEMS	84
L459 CHECK CONTROL PANELS FOR INOPERATIVE FUSES	84
L458 CHECK CONNECTIONS FOR CORROSION AND TIGHTNESS	84
L475 INSTALL END OF LINE DEVICES	84
L480 MAKE MINOR REPAIRS ON HARDWARE CARDS	84
L472 INSPECT ANNUNCIATOR PANELS	84
L529 REMOVE OR REPLACE CAPACITORS	84
L470 EVALUATE CONTRACTOR INSTALLED FIRE ALARM CONTROL SYSTEMS	82
L546 SHUT DOWN FIRE ALARM CONTROL SYSTEMS FORCE OR CONTRACTOR MAINTENANCE	82
L489 PERFORM OPERATIONAL TESTS ON CONTROL UNITS FOR TROUBLE INDICATIONS	82
L473 INSPECT FIRE ALARM CONTROL SYSTEMS FOR CORROSION OR FOREIGN OBJECTS	82
L487 PERFORM OPERATIONAL TESTS ON CONTROL PANEL SWITCHES	82
L465 CHECK TRANSFORMERS FOR OPENS, GROUND, OR SHORTS	82
L484 PERFORM OPERATIONAL TESTS ON BATTERY CHARGERS	82
L537 REMOVE OR REPLACE FIRE ALARM LOW VOLTAGE RELAYS	82
L528 REMOVE OR REPLACE ANNUNCIATOR PANELS	82
L543 REMOVE OR REPLACE LOW VOLTAGE TRANSFORMERS	82
L508 PERFORM PMI ON CONTROL UNITS FOR ALARM INDICATIONS	80
L509 PERFORM PMI ON CONTROL UNITS FOR TROUBLE INDICATIONS	80
L499 PERFORM OPERATIONAL TESTS ON TELEPHONE TRANSMISSION LINES BETWEEN TRANSMITTERS AND RECEIVERS	80
L547 UPDATE FIRE ALARM CONTROL SYSTEMS BLUEPRINTS	80
L507 PERFORM PMI ON CONTROL PANEL SWITCHES REQUIREMENTS	80

TABLE B3

OCCUPATIONAL JOB SERIES: 2606

OCCUPATIONAL TITLE: ELECTRONICS INDUSTRIAL CONTROLS MECHANIC

GROUP SIZE: 28 PERCENT: Of Sample - 4% Of Civilians - 10%

TASKS IN DESCENDING ORDER OF PERCENT MEMBERS PERFORMING:

TASKS	PERCENT MEMBERS PERFORMING
G236 SOLDER ELECTRICAL CONNECTIONS	89
H268 PERFORM OPERATIONAL TESTS ON ELECTRICAL OR ELECTRONIC CONTROLLED DEVICES	75
F170 READ AND INTERPRET WIRING DIAGRAMS	71
H266 PERFORM OPERATIONAL TESTS ON ELECTRICAL AND ELECTRONIC POWER SUPPLIES	71
L543 REMOVE OR REPLACE LOW VOLTAGE TRANSFORMERS	68
L539 REMOVE OR REPLACE INOPERATIVE FUSES	64
E101 MAKE ENTRIES ON AF FORMS 1879 (BCE JOB ORDER RECORD)	61
H264 PERFORM OPERATIONAL TESTS ON ELECTRIC-PNEUMATIC SWITCHES	61
H265 PERFORM OPERATIONAL TESTS ON ELECTRICAL ACTUATOR MOTORS	61
H283 REMOVE OR REPLACE ELECTRICAL OR ELECTRONIC HVAC CONTROL SYSTEMS	57
F113 ADJUST DAMPER LINKAGES	57
F114 ADJUST DAMPERS	57
H284 REMOVE OR REPLACE ELECTRICAL OR ELECTRONIC CONTROLLERS	57
H285 REMOVE OR REPLACE ELECTRICAL OR ELECTRONIC CONTROLLED DEVICES	57
H278 PERFORM OPERATIONAL TESTS ON HVAC ELECTRICAL AND ELECTRONIC CONTROL POWER SUPPLIES	57
J333 INSTALL ELECTRONIC TEMPERATURE SENSORS	57
H248 CALIBRATE ELECTRONIC SINGLE INPUT CONTROLLERS	57
L525 READ AND INTERPRET FIRE ALARM SCHEMATICS AND DRAWING	57
L465 CHECK TRANSFORMERS FOR OPENS, GROUNDS, OR SHORTS	57
Q706 INSTALL PRESSURE SWITCHES	57
L541 REMOVE OR REPLACE LAMP SOCKETS	57
F166 PERFORM OPERATIONAL TESTS ON DGP COMPONENTS	54
H256 INSTALL ELECTRICAL OR ELECTRONIC CONTROLLED DEVICES	54
F145 INSPECT DAMPER TRAVEL AND CLOSE OFF	54
H286 REMOVE OR REPLACE ELECTRONIC ACTUATOR MOTORS	54
F133 CHECK MECHANICAL OPERATION OF DAMPERS	54
H239 ADJUST ELECTRIC ACTUATOR MOTORS	54
H269 PERFORM OPERATIONAL TESTS ON ELECTRONIC ACTUATOR MOTORS	54
H247 CALIBRATE ELECTRONIC DUAL INPUT CONTROLLERS	54
H242 ADJUST ELECTRONIC SYSTEM RESETS	54
H271 PERFORM OPERATIONAL TESTS ON ELECTRONIC INTERFACE DEVICES	54
H241 ADJUST ELECTRONIC ACTUATOR MOTORS	54

TABLE B4

OCCUPATIONAL JOB SERIES: 2608

OCCUPATIONAL TITLE: ELECTRONICS DIGITAL COMPUTER MECHANIC

GROUP SIZE: 15 PERCENT: Of Sample - 2% Of Civilians - 5%

TASKS IN DESCENDING ORDER OF PERCENT MEMBERS PERFORMING:

TASKS	PERCENT MEMBERS PERFORMING
G236 SOLDER ELECTRICAL CONNECTIONS	93
L459 CHECK CONTROL PANELS FOR INOPERATIVE FUSES	87
L525 READ AND INTERPRET FIRE ALARM SCHEMATICS AND DRAWINGS	87
L456 ADJUST POWER SUPPLIES FOR PROPER VOLTAGE	80
L458 CHECK CONNECTIONS FOR CORROSION AND TIGHTNESS	73
L497 PERFORM OPERATIONAL TESTS ON POWER SUPPLIES	73
L465 CHECK TRANSFORMERS FOR OPENS, GROUNDS, OR SHORTS	73
J314 ADJUST EMCS TEMPERATURE SENSORS	73
L539 REMOVE OR REPLACE INOPERATIVE FUSES	73
L469 DISCONNECT SUPERVISORY CIRCUITS TO TEST FOR OPENS, GROUNDS, OR SHORTS	73
K366 BENCH REPAIR INTRUSION ALARM CONTROL SYSTEMS	73
L542 REMOVE OR REPLACE LIGHT EMITTING DIODES (LED) AND LAMPS	73
J310 ADJUST EMCS FLOW SENSORS	73
L493 PERFORM OPERATIONAL TESTS ON HARDWARE CARDS	73
L494 PERFORM OPERATIONAL TESTS ON INTERFACE UNITS	73
L484 PERFORM OPERATIONAL TESTS ON BATTERY CHARGERS	73
L543 REMOVE OR REPLACE LOW VOLTAGE TRANSFORMERS	73
F170 READ AND INTERPRET WIRING DIAGRAMS	67
H271 PERFORM OPERATIONAL TESTS ON ELECTRONIC INTERFACE DEVICES	67
F162 ISOLATE MALFUNCTIONS TO PRINTED CIRCUIT CARDS IN DATA GATHERING PANELS (DGP)	67
I292 CALIBRATE SENSOR INPUTS	67
H276 PERFORM OPERATIONAL TESTS ON EMCS COMMUNICATIONS LINES	67
J326 CALIBRATE EMCS TEMPERATURE SENSORS	67
L535 REMOVE OR REPLACE DIODES OR DIODE BRIDGES	67
J346 ISOLATE MALFUNCTIONS TO ELECTRONIC TEMPERATURE SENSORS	67
J352 ISOLATE MALFUNCTIONS TO EMCS TEMPERATURE SENSORS	67
L529 REMOVE OR REPLACE CAPACITORS	67
L480 MAKE MINOR REPAIRS ON HARDWARE CARDS	67
L462 CHECK LOW VOLTAGE RELAYS	67
L472 INSPECT ANNUNCIATOR PANELS	67
L475 INSTALL END OF LINE DEVICES	67
L483 PERFORM OPERATIONAL TESTS ON ALARM INITIATING AND INDICATING CIRCUITS AND DEVICES	67
L473 INSPECT FIRE ALARM CONTROL SYSTEMS FOR CORROSION OR FOREIGN OBJECTS	67

TABLE B5

OCCUPATIONAL JOB SERIES: 2610

OCCUPATIONAL TITLE: ELECTRONICS INTEGRATED SYSTEMS MECHANIC

GROUP SIZE: 10 PERCENT: Of Sample - 1% Of Civilians - 3%

TASKS IN DESCENDING ORDER OF PERCENT MEMBERS PERFORMING:

TASKS	PERCENT MEMBERS PERFORMING
L525 READ AND INTERPRET FIRE ALARM SCHEMATICS AND DRAWINGS	80
G236 SOLDER ELECTRICAL CONNECTIONS	80
F170 READ AND INTERPRET WIRING DIAGRAMS	70
L479 MAINTAIN HISTORICAL DATA ON FIRE PROTECTION SYSTEMS	70
G228 READ AND INTERPRET PNEUMATIC DIAGRAMS	70
A7 DETERMINE WORK PRIORITIES	70
L489 PERFORM OPERATIONAL TESTS ON CONTROL UNITS FOR TROUBLE INDICATIONS	70
L488 PERFORM OPERATIONAL TESTS ON CONTROL UNITS FOR ALARM INDICATIONS	70
L504 PERFORM PMI ON BATTERY CHARGERS	70
L484 PERFORM OPERATIONAL TESTS ON BATTERY CHARGERS	70
L483 PERFORM OPERATIONAL TESTS ON ALARM INITIATING AND INDICATING CIRCUITS AND DEVICES	70
L467 CLEAN CONTROL PANELS, INITIATING, AND SIGNALING DEVICES	70
L547 UPDATE FIRE ALARM CONTROL SYSTEMS BLUEPRINTS	70
L472 INSPECT ANNUNCIATOR PANELS	70
L469 DISCONNECT SUPERVISORY CIRCUITS TO TEST FOR OPENS, GROUND, OR SHORTS	70
H268 PERFORM OPERATIONAL TESTS ON ELECTRICAL OR ELECTRONIC CONTROLLED DEVICES	70
L475 INSTALL END OF LINE DEVICES	70
L473 INSPECT FIRE ALARM CONTROL SYSTEMS FOR CORROSION OR FOREIGN OBJECTS	70
K377 INSTALL DURESS ALARM SENSORS	70
L497 PERFORM OPERATIONAL TESTS ON POWER SUPPLIES	70
G189 ADJUST PNEUMATIC PRESSURE REGULATORS AND SWITCHES	70
L476 INSTALL FIRE ALARM CONTROL SYSTEMS	70
K396 ISOLATE MALFUNCTIONS IN DURESS ALARM SENSORS	70
J332 INSTALL ELECTRICAL TEMPERATURE SENSORS	70
L528 REMOVE OR REPLACE ANNUNCIATOR PANELS	70
I292 CALIBRATE SENSOR INPUTS	70
J346 ISOLATE MALFUNCTIONS TO ELECTRONIC TEMPERATURE SENSORS	70
L539 REMOVE OR REPLACE INOPERATIVE FUSES	70
L540 REMOVE OR REPLACE INTERFACE UNITS	70
L537 REMOVE OR REPLACE FIRE ALARM LOW VOLTAGE RELAYS	70
L533 REMOVE OR REPLACE CONTROL PANEL SWITCHES	70

TABLE B6

OCCUPATIONAL JOB SERIES: 3359

OCCUPATIONAL TITLE: INSTRUMENT MECHANIC

GROUP SIZE: 151 PERCENT: Of Sample - 22% Of Civilians - 52%

TASKS IN DESCENDING ORDER OF PERCENT MEMBERS PERFORMING:

TASKS	PERCENT MEMBERS PERFORMING
G236 SOLDER ELECTRICAL CONNECTIONS	89
F170 READ AND INTERPRET WIRING DIAGRAMS	83
F133 CHECK MECHANICAL OPERATION OF DAMPERS	82
H284 REMOVE OR REPLACE ELECTRICAL OR ELECTRONIC CONTROLLERS	81
F113 ADJUST DAMPER LINKAGES	80
F145 INSPECT DAMPER TRAVEL AND CLOSE OFF	80
G228 READ AND INTERPRET PNEUMATIC DIAGRAMS	79
G235 REMOVE OR REPLACE PNEUMATIC THERMOSTATS	79
G238 TEST PNEUMATIC LINES FOR CRACKS AND LEAKS	79
F114 ADJUST DAMPERS	79
F122 ADJUST VALVE LINKAGES	79
G195 CALIBRATE PNEUMATIC THERMOSTATS	78
G230 REMOVE OR REPLACE PNEUMATIC DAMPER OPERATORS	78
H239 ADJUST ELECTRIC ACTUATOR MOTORS	78
G212 INSPECT PNEUMATIC ACTUATORS FOR PROPER OPERATION	77
G231 REMOVE OR REPLACE PNEUMATIC DUAL INPUT RECEIVER CONTROLLERS	77
G188 ADJUST PNEUMATIC DAMPER OPERATORS	77
G222 INSTALL PNEUMATIC THERMOSTATS	77
G229 REMOVE OR REPLACE PNEUMATIC ACTUATORS	77
G189 ADJUST PNEUMATIC PRESSURE REGULATORS AND SWITCHES	77
F134 CHECK MECHANICAL OPERATION OF WATER VALVES	77
F119 ADJUST MIXED AIR SYSTEMS	77
G232 REMOVE OR REPLACE PNEUMATIC RELAYS	77
H264 PERFORM OPERATIONAL TESTS ON ELECTRIC-PNEUMATIC SWITCHES	77
G193 CALIBRATE PNEUMATIC SINGLE INPUT RECEIVER CONTROLLERS	76
G216 INSTALL PNEUMATIC ACTUATORS	76
H265 PERFORM OPERATIONAL TESTS ON ELECTRICAL ACTUATOR MOTORS	76
G190 ADJUST PNEUMATIC RELAYS	76
G217 INSTALL PNEUMATIC DAMPER OPERATORS	76
H266 PERFORM OPERATIONAL TESTS ON ELECTRICAL AND ELECTRONIC POWER SUPPLIES	76
G237 SPLICE COPPER TO PLASTIC TUBING	75
H268 PERFORM OPERATIONAL TESTS ON ELECTRICAL OR ELECTRONIC CONTROLLER DEVICES	75
F150 INSPECT MIXED AIR SYSTEMS	75
G224 INSTALL PNEUMATIC-ELECTRIC SWITCHES	75
F129 CALIBRATE MIXED AIR SYSTEMS	75

TABLE B7

OCCUPATIONAL JOB SERIES: 4749

OCCUPATIONAL TITLE: MAINTENANCE MECHANIC

GROUP SIZE: 13 PERCENT: Of Sample - 2% Of Civilians - 4%

TASKS IN DESCENDING ORDER OF PERCENT MEMBERS PERFORMING:

TASKS	PERCENT MEMBERS PERFORMING
F133 CHECK MECHANICAL OPERATION OF DAMPERS	92
G236 SOLDER ELECTRICAL CONNECTIONS	92
H239 ADJUST ELECTRIC ACTUATOR MOTORS	92
G228 READ AND INTERPRET PNEUMATIC DIAGRAMS	92
L539 REMOVE OR REPLACE INOPERATIVE FUSES	92
G229 REMOVE OR REPLACE PNEUMATIC ACTUATORS	92
G238 TEST PNEUMATIC LINES FOR CRACKS AND LEAKS	85
H265 PERFORM OPERATIONAL TESTS ON ELECTRICAL ACTUATOR MOTORS	85
L458 CHECK CONNECTIONS FOR CORROSION AND TIGHTNESS	85
H256 INSTALL ELECTRICAL OR ELECTRONIC CONTROLLED DEVICES	85
F122 ADJUST VALVE LINKAGES	85
H282 REMOVE OR REPLACE ELECTRICAL ACTUATOR MOTORS	85
G230 REMOVE OR REPLACE PNEUMATIC DAMPER OPERATORS	85
L541 REMOVE OR REPLACE LAMP SOCKETS	85
G232 REMOVE OR REPLACE PNEUMATIC RELAYS	85
G219 INSTALL PNEUMATIC RELAYS	85
G217 INSTALL PNEUMATIC DAMPER OPERATORS	85
J332 INSTALL ELECTRICAL TEMPERATURE SENSORS	85
L543 REMOVE OR REPLACE LOW VOLTAGE TRANSFORMERS	85
G188 ADJUST PNEUMATIC DAMPER OPERATORS	77
G203 DRAIN AIR TANKS	77
L508 PERFORM PMI ON CONTROL UNITS FOR ALARM INDICATIONS	77
L509 PERFORM PMI ON CONTROL UNITS FOR TROUBLE INDICATIONS	77
G212 INSPECT PNEUMATIC ACTUATORS FOR PROPER OPERATION	77
L459 CHECK CONTROL PANELS FOR INOPERATIVE FUSES	77
F113 ADJUST DAMPER LINKAGES	77
F114 ADJUST DAMPERS	77
L469 DISCONNECT SUPERVISORY CIRCUITS TO TEST FOR OPENS, GROUNDS, OR SHORTS	77
G216 INSTALL PNEUMATIC ACTUATORS	77
G210 INSPECT COMPRESSOR SAFETY RELIEF VALVES	77
F134 CHECK MECHANICAL OPERATION OF WATER VALVES	77
L465 CHECK TRANSFORMERS FOR OPENS, GROUNDS, OR SHORTS	77
G211 INSPECT COMPRESSOR SWITCHES	77
L504 PERFORM PMI ON BATTERY CHARGERS	77
G190 ADJUST PNEUMATIC RELAYS	77
G209 INSPECT AUTOMATIC DRAIN VALVES	77

TABLE B8

OCCUPATIONAL JOB SERIES: 5306

OCCUPATIONAL TITLE: AIR CONDITIONING EQUIPMENT MECHANIC

GROUP SIZE: 5 PERCENT: Of Sample - 1% Of Civilians - 2%

TASKS IN DESCENDING ORDER OF PERCENT MEMBERS PERFORMING:

TASKS	PERCENT MEMBERS PERFORMING
Q201 CLEAN AIR DRYER CONDENSER COILS	100
K403 ISOLATE MALFUNCTIONS IN ULTRASONIC MOTIONS SENSORS	80
J342 INSTALL RELATIVE HUMIDITY SENSORS	80
E93 MAINTAIN WORK ORDER FILES	80
E91 MAINTAIN PUBLICATIONS	80
G203 DRAIN AIR TANKS	80
Q711 INSTALL TEMPERATURE ACTUATED SWITCHES	80
G204 INSPECT AIR COMPRESSOR SWITCHES	80
D72 DEMONSTRATE HOW TO LOCATE TECHNICAL INFORMATION	80
Q676 ADJUST PRESSURE SWITCHES	80
Q679 ADJUST TIME DELAY RELAYS	80
F111 ADJUST BALANCING VALVES	80
F154 INSPECT WATER PUMPS FOR PROPER FLOW	80
Q678 ADJUST TEMPERATURE ACTUATED SWITCHES	80
Q706 INSTALL PRESSURE SWITCHES	80
Q719 PERFORM PERIODIC MAINTENANCE INSPECTIONS (PMI) ON ACROSS-THE-LINE STARTERS	80
G198 CHECK OIL LEVEL IN COMPRESSORS AND CRANKCASES	80
G206 INSPECT AIR FILTERS ON CONTROL AIR COMPRESSORS	80
F112 ADJUST CHILLED WATER VALVES	80
F155 INSPECT WATER PUMPS FOR PROPER SHAFT ROTATION	80
F163 LUBRICATE BEARINGS, DAMPER, AND VALVE LINKAGES	80
G199 CHECK PRESSURE REDUCING VALVE SETTINGS	80
G205 INSPECT AIR DRYERS FOR PROPER OPERATION	80
G207 INSPECT AND CLEAN AIRLINE STRAINERS OR FILTERS	80
G210 INSPECT COMPRESSOR SAFETY RELIEF VALVES	80
G211 INSPECT COMPRESSOR SWITCHES	80
Q675 ADJUST LIMIT SWITCHES	80
G208 INSPECT AND OIL AIR COMPRESSOR MOTORS	80
F134 CHECK MECHANICAL OPERATION OF WATER VALVES	80
F113 ADJUST DAMPER LINKAGES	80
F114 ADJUST DAMPERS	80
F115 ADJUST DUAL DUCT TERMINAL DEVICES	80
F133 CHECK MECHANICAL OPERATION OF DAMPERS	80
F144 INSPECT CHILLED WATER COILS	80
F145 INSPECT DAMPER TRAVEL AND CLOSE OFF	80
F165 PERFORM AIR-BALANCING	80

APPENDIX C
TABLES DISPLAYING DATA PERTAINING TO
SPECIFIC BACKGROUND QUESTIONS

TABLE C1

PERSONNEL ASSIGNED TO A STRUCTURAL MAINTENANCE
AND REPAIR TEAM (SMART)
(PERCENT RESPONDING YES)

<u>QUESTION</u>	<u>FIRST JOB (N=173)</u>	<u>FIRST ASGMNT (N=325)</u>	<u>DAFSC 54533 (N=229)</u>	<u>DAFSC 54573 (N=169)</u>	<u>TOTAL MILITARY SAMPLE (N=398)</u>
ARE YOU PRESENTLY ASSIGNED TO A STRUCTURAL MAINTENANCE AND REPAIR TEAM (SMART)?	+ 1%	+ 1%	+ 1%	+ 1%	+ 1%

TABLE C2
PERSONNEL ASSIGNED TO A RED HORSE UNIT
(PERCENT RESPONDING YES)

<u>QUESTION</u>	<u>FIRST JOB (N=173)</u>	<u>FIRST ASGMNT (N=325)</u>	<u>DAFSC 54533 (N=229)</u>	<u>DAFSC 54573 (N=169)</u>	<u>TOTAL MILITARY SAMPLE (N=398)</u>
ARE YOU PRESENTLY ASSIGNED TO A "RED HORSE" UNIT?	0%	0%	0%	0%	0%

TABLE C3

PERSONNEL COMPLETING A VOCATIONAL PROGRAM IN HVAC SYSTEMS
BEFORE ENLISTING IN THE AIR FORCE
(PERCENT RESPONDING YES)

<u>QUESTION</u>	<u>FIRST JOB (N=173)</u>	<u>FIRST ASGMT (N=325)</u>	<u>DAFSC 54533 (N=229)</u>	<u>DAFSC 54573 (N=169)</u>	<u>TOTAL MILITARY SAMPLE (N=398)</u>
BEFORE ENLISTING IN THE AIR FORCE, DID YOU COMPLETE A VOCATIONAL TRAINING PROGRAM IN HVAC SYSTEMS, SUCH AS A 4-YEAR HIGH SCHOOL TECHNICAL PROGRAM, ACCREDITED VOCATIONAL SCHOOL, OR A JUNIOR COLLEGE PROGRAM?	2%	4%	4%	4%	4%

TABLE C4

PERSONNEL COMPLETING A VOCATIONAL PROGRAM IN FIRE OR INTRUSION
ALARM SYSTEMS BEFORE ENLISTING IN THE AIR FORCE
(PERCENT RESPONDING YES)

<u>QUESTION</u>	<u>FIRST JOB (N=173)</u>	<u>FIRST ASGMNT (N=325)</u>	<u>DAFSC 54533 (N=229)</u>	<u>DAFSC 54573 (N=169)</u>	<u>TOTAL MILITARY SAMPLE (N=398)</u>
BEFORE ENLISTING IN THE AIR FORCE, DID YOU COMPLETE A VOCATIONAL TRAINING PROGRAM IN FIRE OR INTRUSION ALARMS SYSTEMS, SUCH AS A 4-YEAR HIGH SCHOOL TECHNICAL PROGRAM, ACCREDITED VOCATIONAL SCHOOL, OR A JUNIOR COLLEGE PROGRAM?	+ 1%	+ 1%	1%	1%	1%

TABLE C5

PERSONNEL HOLDING A FULL-TIME HVAC JOB BEFORE
ENLISTING IN THE AIR FORCE
(PERCENT RESPONDING YES)

<u>QUESTION</u>	<u>FIRST JOB (N=173)</u>	<u>FIRST ASGMNT (N=325)</u>	<u>DAFSC 54533 (N=229)</u>	<u>DAFSC 54573 (N=169)</u>	<u>TOTAL MILITARY SAMPLE (N=398)</u>
BEFORE ENLISTING IN THE AIR FORCE, DID YOU EVER HOLD A FULL-TIME JOB (FOR AT LEAST 6 MONTHS), REQUIRING THE ABILITY TO SERVICE HVAC SYSTEMS?	5%	6%	8%	5%	7%

TABLE C6

PERSONNEL HOLDING A FULL-TIME FIRE OR INTRUSION ALARM
SYSTEM JOB BEFORE ENLISTING IN THE AIR FORCE
(PERCENT RESPONDING YES)

QUESTION	FIRST JOB (N=173)	FIRST ASGMNT (N=325)	DAFSC 54533 (N=229)	DAFSC 54573 (N=169)	TOTAL MILITARY SAMPLE (N=398)
BEFORE ENLISTING IN THE AIR FORCE, DID YOU EVER HOLD A FULL-TIME JOB (FOR AT LEAST 6 MONTHS), REQUIRING THE ABILITY TO SERVICE FIRE OR INTRUSION ALARM SYSTEMS?	2%	2%	2%	1%	2%

END

DATE

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